

THE MONIST

RIBOT AND HIS CONTRIBUTION TO PSYCHOLOGY

THEODULE RIBOT was born in 1839 and, after embarking on an administrative career, worked for his philosophy degree at the Ecole Normale Supérieure under the veteran Caro and under the more important thinker Lachelier. In addition he appears to have attended courses by Claude Bernard and by Charcot. Jules Lachelier was a remarkable and inspiring teacher whose influence over the young men of the University of Paris was an important feature of French intellectual life during the period from 1864 to 1875.

That period was marked by the work of Taine whose treatise, *De L'Intelligence*, appeared in 1870. As early, however, as 1857, Taine had attacked in his volume, *Les Philosophes français du XIX^e Siècle*, the vague spiritualist philosophy of the Eclectic Cousin. Taine adopted a more positive attitude but he did not agree with Comte's "Positivism" and its neglect of psychology. He rejected the scornful attitude adopted by Comte while he shattered the flimsy edifice of the Eclectic School in order to open up the way for the foundation of a scientific psychology. Our debt to Taine is immense. He was instrumental in the commencement of the great current of experimental psychology for which France has become famous.

No thinker realized the need for an independent and scientific study of psychological problems more than did Taine and his attitude and his suggestions were carefully and closely followed by Théodule Ribot. Indeed, Ribot's study

of English Psychology appeared in the same year in which Taine published the two volumes of his "Intelligence." By his repeated references to abnormal subjects Taine set the tone for contemporary and subsequent psychological development in his own country. This tendency was further stressed by Ribot who desired to penetrate further into the examination of pathological states and also to make psychology more and more differentiated from, and independent of, philosophy in the sense of metaphysics.

In these efforts he was assisted by the Paris School. This succession of workers includes such men as Charcot, Binet, Paulhan and Pierre Janet. Charcot (1825-1893) was an early pioneer whose notable work was done in reference to nervous diseases at the *Salpêtrière* in Paris. Ribot, as we have already noted, drew inspiration and knowledge from his lectures. Charcot in turn, later on, warmly acknowledged the value of Ribot's work. Binet became known for his experimental work, his study of abnormal personality and his founding of the important review, *L'Année psychologique*. Pierre Janet holds the chair of psychology at the Collège de France and founded the *Journal de Psychologie*. These distinguished names are to be associated with that of Ribot in his labors for the advancement of psychology. The work of the Nancy School (which has lately given us M. Coué) was a development in a direction similar to that of Paris. French psychology has in this way shown characteristics which mark it off from the German workers with their psycho-physical researches and from the introspective and analytic work of British psychologists.

No Frenchman's work contributed more distinctly to this development than did that of Ribot. He saw clearly the need for a close and careful investigation of the abnormal mind and for the application to that investigation of methods of a concrete kind which would operate, at any rate

for the time, independently of all metaphysical discussions concerning the nature of the soul and kindred topics. It was upon this that Ribot laid intense emphasis and it is around these problems that we may classify his work of teaching and of writing.

Attacking the problem at the outset in 1870, we find him in his *critique* of Bain, expressing sincere regret at the neglect of the study of abnormal psychology in England. Ribot's own more important writings are contributions to this end. He followed up his study of Contemporary English Psychology by a volume on the vexed subject of Heredity which he discussed from the psychologist's standpoint. This, it may be noted was his doctorate thesis in French (1873). The Latin thesis which accompanied it was concerned with the work of the English "associationist" Hartley. *Heredity* challenges, as Taine had done, the psychological and metaphysical suppositions of the Eclectic School. Ribot substitutes a biological tone for the *a-priori* reasonings of Cousin. He is intensely sceptical indeed of the pure reason of the Eclectics, while their facile and fictitious doctrine of "faculties of the soul," he denounces. An attempt is made to relate psychological facts to the general conception of evolution. Ribot shows that sentiments and ideas are not the fixed data some psychologists took them to be. Sentiments and ideas themselves evolve. Their development is not controlled by pure reason, but they proceed from the simple to the complex and from the stable to the unstable. Ribot probes the mental life for causes and determinations which must be investigated and does not take refuge in the realm of pure reason. Already, indeed, we see indications of his growing conviction that sentiment and feeling play a far greater part in determining our lives than is generally admitted.

Ribot discusses the question of atavism, of the subtle conflict of male and female contributions working through the subsequent generation and affecting the physical and mental character of the individual. He sees in heredity a principle which plays practically the same role in relation to the species which memory plays in relation to the individual.

Ribot translated Spencer but did not confine his interests as an historian to England alone. He wrote, in 1874, on the philosophy of Schopenhauer and contributed an important criticism of Wundt to the *Revue scientifique* while, in 1879, he published his volume, *La Psychologie allemande contemporaine*.

We must not think, however, that Ribot held the narrow views of a pure specialist in psychology, to the entire exclusion of other interests and of a correct perspective. On the contrary, it was because he realized the vital importance of psychology in any view of life that he was anxious to have it studied in a dispassionate manner, with a scientific temper, and not by men who, like the Eclectic School, approached the subject with *a-priori* theories about the soul. Ribot, indeed, had wide philosophical or metaphysical interests beyond pure psychology. This is shown not only by his volume on Schopenhauer but more especially by his founding the periodical *La Revue philosophique de la France et de l'Etranger*. This Review, it is interesting to note, was founded by Ribot in the same year (1876) in which Professor Croom Robertson established *Mind* in England.¹

It was in 1885 that Ribot's more important work as a teacher began when he was called to the Sorbonne to lecture in Experimental Psychology. This was a consequence of the name he had made for himself as a psychologist

¹ Ribot contributed the following year to an early number of *Mind* an article entitled, "Philosophy in France."

through the excellent trilogy he completed in that year, and which he started in 1881 with the publication of *Les Maladies de la Mémoire* which was followed by *Les Maladies de la Volonté* (1883) and *Les Maladies de la Personnalité* (1885). These three volumes (and indeed most of those which Ribot has given to us) have been translated into English. They are landmarks not only in his own life and mental development but in the history of psychology as a science. He gave a significant sub-title to "The Diseases of Memory," namely, "An Essay in Positive Psychology." This was indicative of his manner and method as we have already outlined it in general.

The main doctrines contained in the trilogy are hostile to both the metaphysical abstractions of Cousin and Jouffroy, and to the facile associationism of the English School. Ribot shows that the feeling side of our nature is more important in determining our character and our action than is the intellectual side. In stressing the importance of unconscious factors he appears at first inclined to a more physiological interpretation of these than he in later years came to adopt. His close study of mental diseases which for him indicate "reversion" brings out many obscure aspects of our mental life.

Tendencies, dispositions set up in our nervous system by heredity and by our environment serve as the physical basis of "character." These in turn give us our "interests," and influence our "attention." Exercise of this power brings with it greater freedom and ultimately choice between opposing and conflicting tendencies. This development will pass beyond the simple and primitive desire for self-preservation to a search for a fuller and more complex life issuing in associations for the enriching of the life of the individual.

The essence of memory in Ribot's opinion lies in the mental conservation and reproduction of the past. Ribot conceives a connecting of innumerable cells acting in concert as the basis of a memory, as in perception. The study of diseased persons, such as those suffering from amnesia throws light, Ribot showed, upon the relative durability of different types of memories. We find that the most recently acquired memories perish first of all, then disappear ideas previously acquired. Sentiments are more durable and appear to be more deeply rooted in the Self than any intellectual ideas. The last type which offers most resistance, is the whole class of actions which have become habitual or automatic. "Ribot's Law" declares that in the remembrance of names, proper names disappear the most easily while verbs are retained longer. Also the memories of early childhood are the most persistent and disappear last.

Cases of partial amnesia display the connection between certain memories and the motor area of the brain. Pathological cases reveal to us the complexity of the function by which we write and speak. Cases of aphasia and agraphia show that an idea may be retained when the sound of the spoken word or the appearance of the written (or printed) word has been forgotten. Here, again, Ribot was able to show that the more intellectual elements are less bound up with the mental life than are the emotional elements.

Similarly by his investigation of *Diseases of the Will*, Ribot was able to describe the evolution in the normal individual, from the first crude reflex actions, prompted by instinct or hereditary tendencies, to the desires which gradually come into consciousness more fully. Then after all this, as a further stage, consciousness gets to a point where it exercises power of inhibition and, indeed, of choice. Here Ribot showed is no arbitrary "faculty of

will," operating independently of the rest of the mental constitution. Will is a characteristic of conscious activity. It is consciousness in action, but not a power divorced from the intellectual elements or the subconscious elements of the mind, indeed these last may exercise a profound influence on the character, the volitions and the actions of the individual.

The "Self" indeed is no abstract intellectual Idea, nor a nameless Faculty, nor a mysterious "soul." It is the totality of these states, intellectual, emotional conscious and sub-conscious which make up the personality. The complexity of human personality is well brought out by Ribot in the *Diseases of the Personality*.

While indicating the importance for the unification and maintenance of personality of the organic sensations and of memory, Ribot is nevertheless careful to point out that he is not advocating a merely epi-phenomenal view of consciousness, although Fouillée accused him of this. Ribot does not regard it as "but the glow of a match rubbed on the wall," for he realizes too clearly the essential and determining part played in the totality of mental life by consciousness. What he does wish to make clear is the fact that this consciousness does not cover the whole of the mental life and cannot alone be taken as synonymous with self or personality. Such a view would be superficial and would falsely simplify the facts. For, under the cover of convention, social necessity and other repressive influences lurk forces which may but rarely raise themselves to recognition or to power, as in dreams, but which exist below the normal threshold of consciousness and which contain in themselves, given favorable conditions, sufficient power to upset and radically change the character of the normal personality and to raise another in its place. Ribot enlarged

upon this in 1914 in his volume, *La Vie inconsciente et les mouvements*.

Ribot is opposed to Fouillée's doctrine of idea-forces, for he considers Fouillée to lay an over-emphasis upon this side of phenomena. What determines action is not the *idea* which is by itself powerless, but rather the physiological elements with which it is bound up and upon which it depends. Fouillée in turn argues that the germ of intelligence must be present in any vital movement, for when conscious life begins ideas are already active.

Later it seems that Ribot modified very considerably his stress upon the physiological hypothesis and laid emphasis rather upon the evolving degrees of consciousness from the unconscious or sub-conscious psychic life to the full self-conscious intelligence, and on this point his efforts have been followed up by Dumas, Binet, Delacroix, Pierre Janet, Bergson and Paulhan.

Attention cannot be adequately explained on a purely intellectualist theory. The intellectual use of attention is, Ribot claims, a derived and secondary one. In its primitive form attention is spontaneous and is based on movements determined by feeling, or the affective side of the mind. It is later that attention becomes a more deliberate affair and it arises by the inhibition by consciousness of a great number of instinctive movements or adaptations for the exercise of one or a few such tendencies. Desires and movements induced by them thus lie at the basis of attention. Attention is not a purely physiological phenomenon, it is indeed accompanied by movements, but these movements are neither the cause nor the result of the phenomenon. They are as Ribot shows in discussing "le mécanisme" of attention, concomitants. They are spatial and external expressions of the mental.

Had he only given us these studies and no more Ribot would deserve to rank in the forefront of contributors to modern psychology. He continued, however, to work at problems and at the amplification of his own doctrines. In 1889, one of the Chairs at the Collège de France (*Droit naturel*) became vacant and the authorities decided to make no further appointment to this position but to devote the funds to the creation of a new chair in Experimental and Comparative Psychology for M. Ribot. From time to time after the issue of his Trilogy of *Maladies* and his *Attention* in the eighties (1881-1888) he published volumes, many of them crammed with facts in which he discussed points whose importance he had indicated in his previous writings.

For example, he reaffirmed his thesis of the importance of "the passions" in human life and their greater power than intelligence in 1896 in his *Psychologie des Sentiments* and in *La Logique des Sentiments*, 1905; *Les Passions*, 1907, and *Problèmes de psychologie affective*, 1910. He reiterates his doctrine of the primary importance of motor elements in the mental life. In 1897, Ribot published his volume *L'Evolution des idées générales*, and this was followed in 1900 by *L'Imagination créatrice*.

Special note should be taken of his article on *Method in Psychology* which appeared in 1909 in a publication on *Method in the Sciences* published by the house of Alcan. Ribot's review of method is important and constituted a manifesto against eclecticism and the vagaries which might beset the growing science by taints of "eclecticism."

He recognized the value of introspective work (such for example as that of Maine de Biran) but rightly realized its inadequacy also. The psychologist must supplement it by analysis of the mental development of other human beings, past and present, individual and collective, normal and abnormal. The developments shown by the study of

Sociology in particular are to be carefully noted, as also the material given by records, biographical and other. Comparative and abnormal psychology are essential. Ribot further stressed the demand for a greater knowledge of the principles and facts of physiology and also for experimental work.

In 1909, he admitted that experiment had not given the results which it appeared to promise and that probably more results for the advancement of psychology as a science would come from mental analysis. He indicated, too, the importance of a study of the mental states of emotional subjects and workers of genius or of abnormal powers.

He classified in his *Methode* the Subjective, Objective and Experimental Type of Work. The Subjective was of course the introspective method. The Objective included the direct and indirect methods of observation and included, as a direct method, the early American "tests" of the nineties; while under indirect methods may be listed the study of biography, memoirs and records of customs of societies or groups. The Experimental Type of work Ribot subdivided into three divisions: (1) psycho-physiological; (2) psycho-physical, and (3) pathological. The first dealt with the precise relations between organic changes and mental changes. Regarding the second class, consisting of work like that of the German psychologists Weber and Fechner, Ribot had nothing encouraging to say. It had not led very far in spite of much patient labor bestowed upon it. Much might come of the third class of work, he held, for the study of abnormal mental states would do much to improve our knowledge of the more hidden working of the normal mind. The recent Freudian researches, in spite of their exaggerated sexual emphasis and interpretation, have done much to bring out the truth of Ribot's statement, while the analysis-work of men like the late

English psychologist Rivers upon men who were victims of shock and fear has been a valuable contribution to the science of psychology.

We have referred to all his books but it must be remembered that some of Ribot's best work went into his beloved *Revue* which he directed until his death. Other periodicals occasionally profited from his pen. A notable instance of this was his critique of Wundt published in the *Revue Scientifique* (1873).

His doctrine of the emotions is akin to that made familiar by Lange and by William James. He develops a conception of an *emotional* memory, a link not of ideas but of emotional states. As he showed to be the case in memory, will and personality the development is gradual from primary data, so he endeavors to show that the emotions themselves are complex and developed from simple beginnings and connections with organic movements and rhythms of a physiological character. From early fear we can follow the development of the emotional nature in the child. Rage and anger appear as a more positive manifestation of the primitive tendency to self-defence and self-satisfaction. Then the tender emotions come later, affection arises and then sympathy. Play and adventure come in their turn and aesthetic activity and appreciation last, and art appears to arise from an over-abundance of rich vitality or life craving a fuller expression for itself, as Guyau claimed.²

The intellectual life may develop but many associations are formed not by an association of ideas but by an association of sentiments and *feelings*. Even with the most severely intellectual type this is true. There is a certain "logic of the feelings," which is natural and not abstract like the logic of the intelligence. Our "*beliefs*," and "*val-*

² Guyau: For an account of Guyau, see the writer's volume, *Modern French Philosophy*.

ues" often owe much more to "an emotional atmosphere" than we are prepared to admit. Indeed, the extremely intellectual type or severe rationalist always finds a *reason*, but he often only finds it *afterwards*, by a process of rationalizing elements which were distinctly emotional. Ribot never tires of insisting upon this and he thinks we do not sufficiently realize this fact. We pride ourselves upon "rationality" but more often we would be nearer the true view of mental activity were we to repeat Pascal's line, "The heart hath reasons which the reason cannot know." No one can deny that Pascal was one of the greatest intellects. But just because of his greatness in this respect he was able to see beyond intellect, to realize its limits. Two centuries after him his fellow-countryman Ribot reinforces the point, bases his psychology upon it. Neither Pascal nor Ribot desire to depreciate the value of intellectual work, but they do want us to realize that our mental life is largely an affair of emotion and feeling. The blend of these with intellect may give us "intuition." True, but the point of paramount importance for Ribot is not the preaching of intuition, but an insistence upon the importance for psychology of a true view of the place of what Spinoza listed as "The Passions." If we admit the claims of Ribot regarding the emotional and feeling side of our nature, then we must beware of rationalist interpretations of the actions of individuals or of societies.

In regard to the individual, Ribot claimed that the passions develop sub-consciously, they develop and end by use, by transformation or by a tragic and disastrous expression. This is precisely what the study of psycho-analysis is revealing today. We are finding many of Ribot's statements quite true. The workings of passion are evident in individuals, these tendencies may be transformed or "sublimated" as we say, or they may go on to find an uncontrolled

and disastrous expression issuing in extreme cases in diseases of memory or of will or of personality.

Such is true of individuals, and the mentality of society is akin to it. Human society needs psycho-therapeutic treatment, just as some individuals do. It is suffering from emotionalism as all crowds and herds do suffer. Passions of greed, of hate and lust sweep over the human herd. Suicide, insanity, crime, class hatred and war are the social manifestations.

Théodule Ribot had no desire to make his fellows pessimistic or to be a pessimist although he died (an honored member of the institute) in the darkest hours of the Great War (in 1916) but he did want mankind to be aware of its own nature, individually and collectively. He was convinced that Psychology has an important work of impartial observation to perform and that it has a great future among the developing investigations and studies of human society. He strove hard to make it an independent study because he felt that whatever hopes or aspirations man has he can only work towards them successfully if he knows his own nature. To explore that nature impartially is the task of psychology. We have too long believed as a race complacently in our "rationality," our "civilization." Ribot says in effect, "Be not deceived," "Look at yourselves," and repeats in modern terms the Socratic maxim, "Know thyself." Only self-knowledge, and self-control can raise man above the animal mentality. We must not close our eyes to human passions, we must recognize them and face them. It may be that Spinoza was right when he said that "to *think* the emotions is to conquer them!" Since his day no greater contribution has been made to the study of the emotions than that given by Théodule Ribot. As psychologists, our debt to him is immense.

Ribot was not working as a moralist, his aim was positive, to probe to the depths human nature. He was largely instrumental in showing us that there are depths to that nature, depths which "associationism" and kindred psychological theories of a purely intellectualist type leave unfathomed and unexplored. His labors bear fruit not only in his own department of psychology, but in the realms of medicine, of education, in general philosophy and in the grand study of human society.

J. ALEXANDER GUNN.

THE UNIVERSITY OF MELBOURNE, AUSTRALIA.

THEORIES OF THE ORIGIN OF THE STATE IN CLASSICAL POLITICAL PHILOSOPHY

I. INTRODUCTORY

IN attempting a resumé of the theories of the origin of the state in ancient and early medieval times, a few introductory observations upon terminology might not be entirely out of place. While today the concepts society, state, and government are distinct categories to the informed student of the social sciences, such was not the case until the later middle ages or early modern times, and even in many modern writers a certain vagueness seems to persist. While there were preliminary attempts to distinguish between these concepts in both classical and medieval times, as in Aristotle's discussion of the nature of a constitution and Marsiglio of Padua's notion of the delegation of law-making power, still it was not until the publication in 1576 of Jean Bodin's *Six Books Concerning the State*, that a clear distinction was made between these three terms.¹ By the state we mean, to quote from one of the best recent manuals, "a sovereign community, politically organized for the promotion of common ends and the satisfaction of common needs";² while the government represents, "the collective name for the agency, magistracy, or organization, through which the will of the state is formulated,

¹ Dunning, W. A., *History of Political Theories from Luther to Montesquieu*, p. 104.

² Garner, *Introduction to Political Science*, p. 44.

expressed, and realized.”³ The term “society” is a still broader concept. Professor Willoughby has well distinguished between the nature of society and of the state: “We thus distinguish between the conception of an aggregate of men as politically organized—as constituting a body politic—and the same community of men as forming merely a group of individuals with mutual economic and social interests. The body politic is this social body plus the political organization. An aggregate of men living together and united by mutual interests and relationships we term a society.”⁴

Not only the lack of differentiation between these concepts in ancient times makes the study of the classical theories of the origin of the state confusing to the modern reader, but an equal misunderstanding may arise if one does not remember that the view of a state in the works of Greek, Roman, and early medieval writers was that of the city-state of classical times. Not until the time of St. Thomas Aquinas, and more particularly that of Machiavelli, do we find theorists getting much beyond that conception, and even they rather modified than abandoned the classical conception of the state.⁵ Bodin, again, seems to have been the first one resolutely to turn his back upon the notion of limitation of numbers in a state and to take the ground that sovereign organization was the fundamental characteristic of the state.⁶ Naturally, then, the early conception of the nature of the state as a limited city-state would modify to some extent any theories regarding its origin.

³ Ibid.

⁴ Willoughby, W. W., *The Nature of the State*, p. 2.

⁵ Dunning, W. A., *A History of Political Theories, Ancient and Medieval*, pp. 197-198; 310-315.

⁶ Dunning, W. A., *A History of Political Theories from Luther to Montesquieu*, p. 90.

II. THEORIES OF POLITICAL ORIGINS FROM HOMER TO SOCRATES

As is well known, the earliest records of Greek literature are to be found in the Homeric poems. In them we find no particular theories regarding the state, but rather a description of the political conditions in the early stages of Greek society, conditions which have been well summarized in the works of Professors Seymour and Keller.⁷ Modern comparative ethnology has shown that these conditions were not widely different from the state of semi-tribal, semi-feudal political conditions wherever they occur. Aristotle seems to have believed that in those days the kings were permitted to reign by the suffrage of the people and were chosen by them. Janet criticizes this conception and shows that, like all similar tribal kings, their power was thought to be derived from a divine source, or, as a modern ethnologist would put it, they were men particularly charged with "mana." Says Janet: "*Aristote définit la royauté des temps héroïques une royauté consentie par les citoyens, et héréditaire par la loi. On ne trouve pas dans Homère des traces de cette origine populaire de la royauté. Il paraît plutôt reconnaître à la royauté une origine divine: il dit que la pouvoir des rois vient de Jupiter. Leur pouvoir, semblable au pouvoir paternel, est absolu et ne souffre pas d'opposition.*"⁸

The functions of these Homeric kings included those of the priest, judge, and military leader.⁹ Their rule was of

⁷ Seymour, T. D., *Life in the Homeric Age*. Keller, A. G., *Homeric Society*.

⁸ Janet, P., *Histoire de la science politique dans ses rapports avec la morale*, Edition of 1872, Vol. I, p. 72.

⁹ Ibid.

a patriarchal nature: "*Cette royauté est encore patriarcale; les rois sont appelés 'pasteurs des peuples'; le bien de peuple, le salut de peuple est leur devoir.*"¹⁰ In addition to the kings, there were assemblies consisting of the elders and sometimes of the whole people to whom the kings submitted their proposals. The assemblies did not deliberate but gave their advice by acclamation.¹¹

Passing down some five centuries from the time of the circumstances described in the Homeric literature one finds a most striking passage in Æschylus (525-456 B.C.) where he anticipates Lucretius by more than five centuries in a very acute description of the general course of the development of civilization.¹² There is little of interest, however, to the political scientist and one may turn to the historian and traveler, Herodotus (484-425 B.C.). In Book III, 80-82, of his *History* he introduces a dialogue as to the respective merits of the three main forms of government: monarchy, oligarchy, and democracy. While the argument is put in the mouths of Persians, there can be little doubt that the ideas were Greek.¹³ Janet is of the opinion that this is the first historic instance of a discussion of this question which has exercised the ingenuity of political thinkers from the days of Herodotus to the present, and concerning which no general agreement has ever been reached: "*Telles sont les opinions diverses qui s'opposent dans ce mémorable débat où paraît s'être agité pour la première fois le problème des destinées politiques des peuples; débat qui n'est pas près d'être terminé.*"¹⁴

¹⁰ Ibid.

¹¹ Ibid. Cf., also, Botsford and Sihler, *Hellenic Civilization*, pp. 88-94.

¹² Botsford and Sihler, *Hellenic Civilization*, pp. 64-65.

¹³ Ibid., pp. 219-222.

¹⁴ Janet, op. cit., p. 75.

III. SOCRATES

We do not have enough records of the sayings of Socrates to judge with any accuracy whether or not he may rightfully be accredited with having formulated a theory of the state. It seems reasonable to suppose that he first introduced the conception of the law of nature as contrasted to human law, and thus opened up a line of thought, which in its later manifestations became a fertile basis for theories of political and social origins.¹⁵ Whether or not Socrates saw any such possibilities in his doctrine we do not know. What is universally agreed concerning the contribution of Socrates to political science is that he brought in a beginning of a scientific method in insisting upon precise and exact definitions of the terminology used. Says Janet: "*C'est lui qui a ramené la philosophie à la morale ou à la politique, ce qui pour les anciens est la même chose; et qui a donné à la morale la méthode et l'autorité de la science.*"¹⁶ At the same time, it is quite agreed that he developed no systematic theories in any line of thought; in fact, he was opposed to any system, and had his greatest delight in making evident the ridiculous elements in the systems of his day. Janet has summed up this point well: "*La politique de Socrate n'a rien de scientifique. Elle est surtout pratique et morale. Il traite des devoirs de la vie publique comme des devoirs de la vie domestique, sans s'élever à aucune théorie abstraite.*"¹⁷

¹⁵ Dunning, W. A., *A History of Political Theories Ancient and Medieval*, pp. 21-23.

¹⁶ Janet, op. cit., p. 91.

¹⁷ Ibid., p. 102. For the suggestion of traces of the doctrine of a social contract among the Sophists, with whom Socrates is usually associated, see Barker, Ernest, *The Political Thought of Plato and Aristotle*, p. 36. For the same writer's acute analysis of the doctrines of Socrates, see pp. 46-60. For Wilmoughby's affirmation of the existence of the contract idea among the Sophists, see his *Political Theories of the Ancient World*, pp. 78-9.

IV. PLATO

When we come to Socrates' most famous disciple and apologist, Plato (429-347 B. C.), we first come upon ample evidence of a comprehensive theory of the origin of the state, or perhaps, as it might be more accurately described, of society, for there is scarcely any attempt to make a differentiation between the meaning of these terms, or to differentiate the government from either. Plato's first work on the state in order of composition, and the most famous of all his treatises, is the *Republic*. This is not, however, in any way a scientific treatise. Least of all is it historic. Rather it is a picture of an ideal commonwealth devised to illustrate Plato's conception of justice; so ideal in fact, that Plato even seems to have doubts regarding the possibility of its existence.¹⁸ Opinions regarding its value to political science have varied. Pollock says: "The Platonic Republic, I think, must be considered as a brilliant exercise of the philosophic imagination, not as a contribution to political science."¹⁹ Nettleship is, perhaps, a little more appreciative when he says: "The whole Republic is really an attempt to interpret human nature psychologically. The postulate upon which its method rests is that all the institutions of society, class organization, law, religion, art, and so on, are ultimate products of the human soul, an inner principle of life which works itself out in these outward shapes."²⁰

In the *Republic*, Plato explains the origin of society or the state as having its basis in the differentiated wants of mankind and the resulting division of labor.²¹ It by no

¹⁸ Plato, *Laws*, V, 739. (Jowett's translation.)

¹⁹ Pollock, Sir Fredrick, *A History of the Science of Politics*, p. 14.

²⁰ Nettleship, Richard Lewis, *Lectures on the Republic of Plato*, p. 68.

²¹ Plato, *Republic*, II, 369. (Jowett's translation.)

means purports to be an historical account. "We may call it a logical picture of the origin of society, in this sense, that it illustrates what the existence and maintenance of society demands, and how these demands can best be satisfied, taking these demands in a logical order."²² A state, according to Plato, is an integration of the needy and their helpers, every person belonging to both of these classes. The three primary wants of man being food, dwellings, and clothing, the fundamental requirements in the differentiation of the inhabitants of the first society was that one should be a husbandman, another a builder, another a weaver, and still another a shoemaker. Thus, he says, every notion of a state in its period of inception must include four or five men.²³ Not only was this division of labor essential to the existence of a society, but it was also of great value in bringing about the production of goods superior to those which could have been produced by a single man if compelled to care for all of his wants; that is, division of labor produced the specialist. Upon further reflection, Plato saw the necessity of adding other classes in the composition of his commonwealth. That the husbandman, builder, weaver, and shoemaker might have tools, there had to be carpenters and smiths. Then to furnish oxen for the husbandmen and leather for the shoemaker, as well as cloth for the weaver, it was necessary to add shepherds and herdsmen. Further, as it was impossible to locate a city in a habitat which would be self-sufficing, there had to be a class which would go and bring such things as the state did not possess from a neighboring city. And, that they might not return empty-handed, the amount of home production must be increased beyond the amount of home consumption, in order to enable the merchants to

²² Nettleship, *op. cit.*, p. 71.

²³ *Republic*, II, 369.

take something to offer in return for what they desired. This increased home consumption would of necessity entail a greater number of husbandmen and artisans, and, as in many cases the merchants would be compelled to cross the sea, sailors would be essential to the success of their trip. However, upon further reflection, Plato considered that it would be impossible for trading to go on in a city without a market-place; hence there should be brought into being the retail merchants who should care for the local trade. Finally, there was needed the class of hirelings to make the state natural and perfect.²⁴

It is unnecessary to point out that his whole social scheme had for its basic principle exchange based upon a division of labor. Following this description of the origin of the state Plato goes on to give a picture of primitive life as he conceived of it.²⁵ This description of almost idyllic felicity bears a striking resemblance to Rousseau's picture of the life of primitive man in a state of nature, as painted in his *Discourse on the Origin of Inequality Among Men*.²⁶ It should be borne in mind, however, that the resemblance between the two descriptions lies entirely in the conception of the primitive freedom from restraint and self-satisfied happiness, and not in external similarity, for Plato pictures a much more advanced stage of culture than Rousseau.

But, after all, this picture of primitive life hardly satisfied Plato's conception of the ideal state. The life in which the mere bodily wants were satisfied was inadequate—such a state was a mere "city of pigs." To secure perfection there must be a certain degree of luxury. Luxury, in turn, would call into being new classes whose services would be needed in providing for the new wants. There would have

²⁴ Ibid., II, 370-371.

²⁵ Ibid., 372.

²⁶ Rousseau, *Discourse on the Origin of Inequality Among Men*, translated by Cole, pp. 199-200, 203.

to be now, in addition to the former classes, the courtesan, the sculptor, the painter, the embroiderer, the musician, the poet, the dancer, the modiste, barbers, cooks, confectioners, nurses, tutors and physicians.²⁷ This great augmentation of the wants of the people would necessitate the extension of the borders of the state. This territorial aggression, however, would in turn bring on war with the neighboring peoples. Since war, no more than anything else, could be carried on successfully without a class specially adapted to such a profession and devoting their time exclusively to it, a new class of soldiers or guardians must be provided, who, being one of the most essential elements in the success of the new state, must be selected with the greatest care.²⁸

Such is the origin of society or the state, for, as is evident to any student of political science, Plato has made no differentiation between the two, and, if one were to judge by the strict canons of political science, that which he describes is not a state at all, but is merely an industrial society.²⁹ It also reflects the Greek conception of the limited nature of the ideal state as regards population and geographic extent. It comes in for all the criticism which may usually be directed against the products of deductive, a priori reasoning, but even this idealistic description is not as inaccurate as might be supposed, if viewed in harmony with Plato's method of approach. Nettleship has stated this in an admirable way:

We have now to notice a second feature in Plato's method; the state is to be looked at in its origin and growth. The phrase, "origin of society," suggests to us at first the most elementary state of society historically discoverable; but we must put that idea aside, for

²⁷ *Republic*, II, 373.

²⁸ *Ibid.*, 373-5.

²⁹ Cf. Bonar, J., *Philosophy and Political Economy*, p. 15

that is not what interests Plato here. He is not concerned with an historical enquiry, such as how Athens came to be what she was, but with this question: Given the fact of society as it is, what are the conditions which its existence implies, what is it in human nature which makes society exist? . . . We should have a modern parallel to this method if a sociologist, taking England as it is, were to set out from the idea that, since life would not go on at all if its necessities were not provided, the life of England rests ultimately on its industrial organization, and were to proceed to ask whether there was any principle of good or bad, right or wrong, discoverable in this industrial organization.³⁰

This exposition of Nettleship's is most illuminating and should prevent any unfair criticism of Plato which might arise from a misunderstanding of his viewpoint. Still it would not be irrelevant to point out some of the main criticisms which might be brought against such a picture of the origin of society. In the first place, like the social contract fallacy, Plato's theory implies knowledge prior to experience, an error which Hume exposed with great lucidity. It assumes that without any previous experience people would perceive the utility of coöperation and the division of labor, and as a result initiate social relations. Not only is this theory philosophically erroneous, but it is contrary to history and ethnography. While there was undoubtedly a division of labor among animals in a crude sense,³¹ which, following the postulate of a logical course of evolution, must have been carried over into human society with ever increasing scope and intensity, still the division of labor by vocations is a relatively late arrangement in human society.³² The early savages were able to

³⁰ Nettleship, *op. cit.*, pp. 69-71.

³¹ Kropotkin, P., *Mutual Aid: a Factor in Evolution*, pp. 1-75; Parmelee, M., *The Science of Human Behavior*, Chaps. XVIII-XX.

³² Giddings, F. H., *Principles of Sociology*, p. 278.

perform all the functions of their simple primitive life. The first division of labor was among the members of a household. In time, through the medium of household practices, some savage would develop a greater facility in making some useful article than was the case with the corresponding members of other households. This would give rise to the practice of engaging him to do the special kind of work for other households, and such procedure would react upon the whole group in making them more skillful in their several lines of industry in order to furnish goods of sufficient excellence to persuade the more skillful member to accept them in pay for his work. This same principle of specialization would later apply to the development of tribal superiority and intertribal barter; and much later there would develop national industries and international trade.³³

The fundamental fact to be noted is that the basis of society in its origin was instinct and sympathy, and not reflection and a perception of utility. In the second place, society has existed from the first existence of animals of as low a development as are now in existence,³⁴ there being no break between animal and human society,³⁵ the human race in all probability having developed through the greater sociability of its precursors.³⁶ While geographic, economic and political factors have had a tremendous influence in shaping and hastening socialization and social evolution, none of them furnishes the fundametal cause of association.³⁷ Still Plato offers a brilliant and modern explanation of social organization, if not of social origins, and one which has been advanced in more or less recent

³³ Giddings, *Ibid.*: Spencer, H., *First Principles*, pp. 416-418; Bücher, C., *Industrial Evolution*, pp. 55-6.

³⁴ Espinas, A., *Des sociétés animales*.

³⁵ Giddings, *op. cit.*, p. 208.

³⁶ *Ibid.*, pp. 206-7.

³⁷ *Ibid.*, pp. 5-8.

times.³⁸ Certainly increased wants and the resultant increase of commerce and industry have been among the most potent factors in the progress of civilization, and it would be no more than tearing down a man of straw to criticize Plato for a lack of knowledge of modern anthropological method.

Mr. Barker in his brilliant study of the political thought of Plato and Aristotle criticizes the above explanation of the origin of society from the standpoint of psychology. He points out how Plato formulates his classes in society on the basis of the three-fold division of the mind according to his system of psychology. The appetitive function of the mind was represented by the economic classes; the spirited by the military; and the rational by the governing. Barker points out that this radical separation of the classes of society is based upon a faulty conception of psychology which makes an unnatural division of the mind.³⁹ Though this may be true, it was an error which persisted until late in the nineteenth century.

In Book III of the *Laws*, as might be expected from the difference in the nature of the two works,⁴⁰ Plato gives a radically different explanation of the origin of society and the state. Instead of the idealistic *à priori* creation there is found an attempt to trace the origin of society in a scientific and historical manner.

In the first place, he calls attention to the necessity of getting a proper perspective as to the amount of time required for the evolution of the state. With an insight strikingly modern, and which contrasts vividly with the

³⁸ Adam Smith, *Wealth of Nations*, Bk. I, Chaps. I-III. Kropotkin, op. cit., Chaps. VII-VIII; Durkheim, *La Division du travail social*.

³⁹ Barker, op. cit., p. 113. For Barker's entire exposition of Plato's origin of the state in the *Republic*, see pp. 101-113.

⁴⁰ Barker, op. cit., pp. 183-186. Dunning, W. A., *A History of Political Theories, Ancient and Medieval*, p. 37.

primitive nature of Bishop Ussher's chronology,⁴¹ Plato lays it down as his opinion that the time essential for the development of the state must have been vast and incalculable; infinite ages, in fact. To him the history of the past was one which recorded the successive rise and perishing of civilizations.⁴² He follows this orientation with respect to time by an account of a great deluge, like that related in Genesis, which destroyed a majority of mankind. This would doubtless to some offer further substantiation of the divine inspiration of the Platonic writings. Only a few hill shepherds survived the deluge, and they were ignorant of the mechanical arts and political rules which had been a part of the accumulated knowledge of those who had perished.⁴³ It will be noticed that he does not here attempt to account for the origin of man whose existence for ages prior to the deluge he takes for granted. In the sixth book of the *Laws*, however, he sets forth his views on the subject as follows: "Every man should understand that the human race either had no beginning at all, and will never have an end, but will always be and has been, or that it began an immense while ago."⁴⁴

From this scanty beginning of a few shepherds and their flocks, society developed through an immense period of time.⁴⁵ In the *Laws* he also gives another Rousseauan picture of primitive life which resembles the Frenchman's sketch much more closely than that given in the *Republic*. The desolation of the primitive people created a feeling of affection and good-will towards one another; and, while they had enough to satisfy their wants, still there was not enough of surplus to cause enmity.⁴⁶ It was, in short, a

⁴¹ See Haddon, A. C., *History of Anthropology*, p. 59, where Dr. Lightfoot eclipsed Ussher in exactness by demonstrating that the creation of man took place Friday, Oct. 23, 4004 B.C. at 9 A. M.

⁴² *Laws*, III, 676.

⁴³ *Ibid.*, 677.

⁴⁴ *Ibid.*, VI, 781.

⁴⁵ *Ibid.*, III, 678.

ruder but more virtuous association than was to be found in any subsequent age.⁴⁷ They had no written laws, nor, indeed, any written language. The only authority was that of the head of the family. Plato thus gave a patriarchal origin to society.

The next step in the growth of society came when the shepherds left the mountains, congregated in the foot-hills, and commenced agriculture.⁴⁸ Each group brought with it its peculiar laws and customs.⁴⁹ The beginning of legislation took place when these groups selected arbiters who reviewed the various family laws, selected the best, and presented them to the chiefs for the government of the tribes.⁵¹ Society thus passed from the patriarchal family stage into the tribal condition. The next advance came about when the tribes passed out from the foot-hills and settled in the villages in the plains and tribal kingship originated.⁵² The fourth and final step in the evolution of the state came when several villages united into a confederation.⁵³ The account of this fourth stage, or the formation of the Dorian Confederation, is one of the most interesting in the whole history of the theories of political origins, for it seems to be the first undeniable example of the theory of the governmental compact in history.⁵⁴ He thus describes the process "The case was as follows: Three royal heroes made oath to three cities which were under a kingly government, that both rulers and subjects should govern and be governed according to the laws which were common to all of them: the rulers promised that as time and the race went forward they would not make their rule more arbitrary; and the subjects said that, if the rulers observed

⁴⁶ Ibid., 679.

⁴⁷ Ibid.

⁴⁸ Ibid., 680.

⁴⁹ Ibid., 681.

⁵⁰ Ibid.

⁵¹ Ibid.

⁵² Ibid., 681-2.

⁵³ Ibid., 683.

⁵⁴ Barker, *op. cit.*, p. 191, note. For Barker's complete exposition of Plato's description of the evolution of the state in the *Laws*, see, pp. 190-193.

these conditions, they would never subvert or permit others to subvert those kingdoms; the kings were to assist kings and peoples when injured, and the peoples were to assist peoples and kings in like manner."⁵⁵

In many respects this account of social and political evolution offered in the *Laws* is excellent and accurate. The emphasis on the great amount of time essential to the course of social evolution, the progress from the patriarchal family to tribal society, the subsequent origin of the kingship, and the integration of the tribes into a confederacy, if not quite in accord with the most critical of modern ethnologists, is quite in agreement with the classical or comparative school of ethnologists, as represented by men like Spencer, and Morgan. The idea, however, of the primitive isolation of man and the existence of a pre-social state of nature or a "golden age" has been cast aside as an a priori creation of "pure reason." The comparative isolation of modern savages cannot be taken as evidence of primitive isolation, in as much as the surviving savages cannot live in large bands because of the scarcity of food in the inhospitable habitats into which they have been driven by their more powerful neighbors or by civilized peoples.⁵⁶ The earliest peoples, obeying the law of least resistance, must always have sought the most favorable habitats, and those who later occupied the hills were people who had been driven there by the pressure of their more powerful enemies. Thus, instead of the plains being populated with the developing hillmen, the hills were inhabited by the outcasts from the plains.⁵⁷

The account of the evolution of industry from the first pastoral stage, through the beginning of agriculture, to the rise of the mechanical arts and commercial activity is

⁵⁵ *Laws*, III, 684.

⁵⁶ Giddings, op. cit., pp. 81-84.

ingenious and approximately correct, although he leaves out the preliminary steps of direct appropriation, the hunting period, and the domestication of animals. The patriarchal origin of society has been pretty generally abandoned now as a theory, though it received its most able exposition and support from so recent and able a writer as Sir Henry Sumner Maine.⁵⁸ Ethnologists are, however, pretty generally agreed that the patriarchal family was an actual institution at a later period which, indeed, did correspond rather generally to the nomadic pastoral stage of primitive industrial life.⁵⁹ While, as might be expected, Plato did not have a correct idea as to the most primitive form of industrial life and social organization, still he stated a correct correlation between a later type of industrial and social development. At the same time, it is worthy of mention that while the idea of the patriarchal origin of human society has been given up, still there is not only a tendency to reject such extreme substitutes for this theory as the theories of promiscuity and communism advanced by men like Lubbock, Bachofen, and Morgan, but also to doubt whether or not the maternal type of descent actually preceded the paternal in all cases.⁶⁰ Further, while Plato manipulates the steps in social evolution somewhat to suit his particular purpose in describing the local conditions with which he was acquainted, on the whole it may be said that his account of social and political origins in the *Laws* is more accurate and complete than most others down to the time of Bodin, if not to the time of Hume. It was certainly more complete than that of Aristotle, which, indeed,

⁵⁷ Ibid., p. 210. Cf. Spencer, *First Principles*, pp. 220-224.

⁵⁸ Maine, H. S., *Ancient Law*, and *Early Law and Custom*, Chap. VII, where he defends the theory in opposition to critics.

⁵⁹ Jenks, E., *A Short History of Politics*, Chap. IV.

⁶⁰ Goldenweiser, A. A., "The Social Organization of The American Indians," *Journal of American Folk-Lore*, Oct.-Dec., 1914, pp. 417-418.

so closely resembles it that it may well have been a condensed adaptation from Plato.

Viewed subjectively, the basis of social relations is justice, according to Plato, and justice consists in its most general sense in the social division of labor.⁶¹ This principle of the division of labor, as mentioned above, extends not only to individuals but also to classes. By thus making justice depend in its most general sense upon the proper division of labor, Plato harmonized his subjective view of the basis of the state with the notion of social origins presented in the *Republic*.

The temptation is great to criticize Plato's conception of the ideal state with its absolute communism among the ruling and military classes—an utopian conception, based as all utopias are, upon the contention that man can control his own social relations, and that social organization is an art rather than an organic growth.⁶² Still it is but fair to point out that Plato himself had serious doubts about the practicability of his scheme, and in the *Laws* he devised his second best state, or the best state possible in the existing condition of society. In this state, private property and family life are to be permitted, but Plato shows his limited Greek horizon when he insists that there shall always be 5,040 houses in this state, and the rulers shall devise ways to regulate population so as to perpetuate such a condition.⁶³

⁶¹ *Republic*, II, 369, IV, 433.

⁶² *Ibid.*, III, 412-417; V, 458-462.

⁶³ *Laws*, V, 739-740. For the history of the influences of the *Republic* of Plato see Barker, *op. cit.*, Appendix B, pp. 525-530. For Janet's treatment of the political thought of Plato, see *op. cit.*, Vol. I, pp. 104-76.

V. ARISTOTLE

The next person to claim our attention is no less celebrated an individual than Aristotle (384-322 B.C.), the pupil and opponent of Plato and the tutor of Alexander the Great. Aristotle is one of the most interesting figures of all history, not only for his individual knowledge and achievements, but for the great influence which, owing to fortuitous circumstances, he exerted upon posterity. There can be no doubt that no other philosopher of antiquity has had an influence upon succeeding generations which even remotely compares to that exerted by Aristotle. His writings are among the few which have ever enjoyed the honor of competing with the supposed word of God for a period of at least three hundred years and over an area which embraced all western Europe. Says Prof. Robinson, speaking of the influence of Aristotle during the period of the domination of scholastic philosophy: "He was called 'The Philosopher,' and so fully were the scholars convinced that it had pleased God to allow Aristotle to say the last word upon each and every branch of knowledge, that they humbly accepted him along with the Bible, the church fathers, and the Canon and Roman law, as one of the unquestioned authorities which together formed a complete guide for humanity in conduct and in every branch of science."⁶⁴

The most distinct contrast between Plato and Aristotle lay in the matter of method. Plato was primarily imaginative and deductive; Aristotle was first of all observational and inductive.⁶⁵ Others may have described this difference as accurately, but few have done it as vividly as Professor

⁶⁴ Robinson, J. H., *The History of Western Europe*, p. 272.

⁶⁵ Dunning, op. cit., pp. 49-50.

Pollock, who says: "Plato's splendor of imagination and charm of language have indeed deserted us; but we get an exact observation of men and things and a sound practical judgment which set us on firm ground and assure us of solid progress.

A balloon is a very fine thing if you are not anxious to go anywhere in particular; a road is common, and the traveling on it may be tedious but you come to the journey's end. Plato is a man up in a balloon who hovers over a new land, and now and then catches a commanding view of its contours through the mist. Aristotle is the working colonist who goes there and makes the roads. The more one considers his work, the more one appreciates his good sense, his tact in dealing with a question in the best way possible under the given circumstances and his candor towards the reader."⁶⁶

While Pollock's generalizations are undoubtedly true when the political theories of Plato and Aristotle are taken as a whole, in regard to the particular subject under discussion, namely, the origin of the state, Plato's account in the *Laws* is more complete and accurate than that presented by Aristotle.

While Aristotle is regarded as the father of the theory of evolution in any comprehensive sense, still he gives no description of the origin of man further than the following: "But the primeval inhabitants of the world, whether they were born of the earth or were the survivors of some destruction, may be supposed to have been no better than ordinary foolish people among ourselves; such is certainly the tradition concerning earth-born men."⁶⁷

When, however, he considers the origin of the state or society, for he failed almost entirely to differentiate between the two concepts in his discussion of genesis, although he

⁶⁶ Pollock, *op. cit.*, p. 16.

⁶⁷ *Politics*, II, 8. (Jowett's translation.)

did to some extent later in his discussion of the constitution of the state, he has a definite theory to offer. Instead of opening his famous *Politics* by a digression upon abstract questions and then proceeding to illustrate them by a state created by deductive reasoning, Aristotle immediately plunged into an analytical discussion of the origin and utility of the state. In the first place, he says that for the perpetuation of the race there must be a union of the sexes; this is the primary requirement for the existence of the state.⁶⁸ Next comes the necessary relation of master and slave that both may be preserved, and out of these two fundamental relations of man and wife, and master and slave arises the family, which he defines as "the association established by nature for the supply of man's everyday wants."⁶⁹

Aristotle's view of the nature of these family relations is worthy of notice. His view of the relations of the sexes is widely at variance with that of Plato as expressed in the *Republic*. Instead of the community of women, the equality of the sexes, and the participation of women in the same occupations as men, Aristotle believed in a strict monogamous family, in which the father was to be the unquestioned ruler,⁷⁰ and adultery was to be punished by a loss of the privileges of citizenship.⁷¹ Moreover, women must not share in the same pursuits as men; the place of the women is in the household, managing domestic affairs.⁷² Aristotle was a firm believer in the natural right of slavery. Those who were gifted with knowledge and foresight were by nature designed to rule, and those possessed primarily of bodily strength, with little intellect, were destined for service.⁷³ This does not seem to be mere theorizing, for there is every evidence that he was firmly convinced of the

⁶⁸ *Ibid.*, I, 2.

⁶⁹ *Ibid.*

⁷⁰ *Ibid.*, I, 11.

⁷¹ *Ibid.*, VII, 16.

⁷² *Ibid.*, II, 5.

⁷³ *Ibid.*, I, 2.

practical truth of such an assertion. He says: "But is there any one thus intended by nature to be a slave, and for whom such a position is expedient and right, or rather is not all slavery a violation of nature? There is no difficulty in answering this question, on grounds both of reason and of fact. For that some should rule and others be ruled is a thing not only necessary, but expedient; from the hour of their birth some are marked out for subjection, others for rule."⁷⁴ While some over sentimental readers may be shocked at this frankness, there can be no doubt but that Aristotle was much nearer the truth than the democratic writers of later days, particularly since the eighteenth century, who discoursed about the natural equality of all men.

Beyond the family the village is the next form of association which arises. It is produced when several families unite for a more complete type of association than that which aims merely at the supplying of everyday needs. The village, as he conceives of it, is, in its most natural form, purely a genetic aggregation—a "colony" from the family.

The state, or the third and highest form of society, comes into being when several villages are united into a single community which is self-sufficing. Having its origin in the mere provision of the actual physical necessities of life, the state has persisted for the complete development of man's social nature. For, as he states in the most important dictum of classical times as far as sociology is concerned, man is by nature a social animal, and the state is not an artificial creation, but simply the natural outgrowth of man's social tendencies and needs. Although all animals are social, man is particularly so by virtue of his unique gift of the power of speech.⁷⁵ Therefore, since society is essential to man's perfect development, society or the state is prior in importance to the individual, and prior in time to the per-

⁷⁴ Ibid., I, 5.

⁷⁵ Ibid., I, 2.

fectly developed individual. Consequently, any one who is able or desires to live apart from society must be abnormal "either a beast or a god."⁷⁶

In the last part of his treatment of the origin of the state Aristotle seems to hint that he regarded the state as the political organization of society, and distinguished between the two concepts. He says: "A social instinct is implanted in all men by nature, and yet he who first founded the state was the greatest of benefactors. For man when perfected is the best of animals, but, when separated from law and justice, he is the worst of all; since armed injustice is the most dangerous, and he is equipped at birth with the arms of intelligence, and with moral qualities which he may use for the worst ends. Wherefore, if he have not virtue, he is the most unholy and savage of animals, and is the most full of lusts and gluttony. But justice is the bond of men in states, and the administration of justice, which is the determination of what is just, is the principle of order in political society."⁷⁷ This passage might be amenable to interpretation as a belief in the pre-political stage of society and the necessity of the formation of political society to curb the natural evils of man—a conception so popular later, but taken in connection with the general tenor of his political doctrines there seems to be little doubt that Aristotle believed in the state as an organic growth. Pollock is of this opinion when he points out that if later political theorists had given proper attention to Aristotle's dictum of the inherent sociability of man, they would have been saved from that fatal fallacy of the theory of a pre-social state of nature and the ensuing social contract.⁷⁸

From the historical point of view Aristotle's account of social genesis is neither as complete nor as accurate as that

⁷⁶ Ibid. For Barker's exposition of Aristotle's theory of the origin of the state, see *op. cit.*, pp. 269-276.

⁷⁷ *Politics*, I, 1-2.

⁷⁸ Pollock, *op. cit.*, pp. 19-20.

given by Plato in the *Laws*, and he also fails to analyze the social division of labor with the same thoroughness that Plato did in his *Republic*. The shortcomings of Aristotle's account of social and political genesis have been admirably summarized by Jowett:

The accustomed method of dividing the whole into its parts is logical rather than historical: that is to say, they are the parts into which it can be dissected, not the elements out of which it has grown. It is not the historical method which resolves institutions and facts into their antecedent elements. Aristotle does not investigate the origins of states, but only divides a genus into species or a larger part into the lesser parts or unities out of which it is made up, or shows how an existing state may be preserved or destroyed. We must not expect him to give an analysis of primitive society, such as would be found in a modern writer on anthropology. His observation and experience were almost confined to Hellas. The earliest forms of property and society were unknown to him. He does not appear to have heard of marriage by capture, and does not distinguish between endogamy and exogamy. The "horror naturalis" which forbids marriage within near degrees of relationship, was to him an established fact. He seems to have supposed that there had existed from the first some rude form of the family, like that of the Homeric Cyclops, in which the individual savage gave the law to his own household. But he does not examine how this lowest form of human society passed into the village and the village into the state. Nor does he seriously attempt to gather the ancient customs of Hellas from the usages of contemporary barbarians, although he occasionally lights upon this path of enquiry which had already been indicated by both Thucydides and Plato.⁷⁹ Nor does it occur to him that the ties of family or caste may be so

⁷⁹ Professor Bury (*History of Greece*, pp. 834-5), has called attention to the lamentable failure of Aristotle to avail himself of the discoveries made by Alexander on his conquest.

strong that the growth of the state is stunted by them; nor, on the other hand, that the life of cities may be so intense as to make any larger political unity impossible.⁸⁰

The truth of this last part of the criticism is well attested to by the very experience of the Greeks themselves in their many and unsuccessful attempts to form a political unity out of the various city states.

Again Aristotle was mistaken in stating that society is prior to the individual. Neither is prior to the other, rather both are complementary and both essential to the perfection of the other.⁸¹ Says Professor Giddings: "The individual, therefore, is not prior to society, or society to the individual. Community is not precedent to competition, or competition to community. From the first competition and community, society and the individual have always been acting and reacting upon each other."⁸²

In Book IV of the *Politics*, Aristotle gives a clear and undeniable statement of the organic theory of society, which was common throughout later history and was especially elaborated during the later part of the nineteenth century by Spencer, Schäffle, Lilenfeld and Worms.⁸³

⁸³ Coker, F. W., *Organismic Theories of the State*.

While he does not develop the theory or carry out the analogy in detail, still there can be no doubt that he understood the principle involved. In the artisans, husbandmen, and laborers he locates the sustaining system; in the traders the distributive system, and in the warriors, legislators, rulers, and judges he discovers the regulative system. To be sure, he does not trace the order of their development and differentiation, and fails to see that their combination in one class is the first stage, and that progress comes through differentiation of structure and function, but in a

⁸⁰ Jowett, *Politics*, Introduction, pp. xix-xx.

⁸¹ Cooley, C. H., *Social Organization*, Chaps. I-II.

⁸² Giddings, *Inductive Sociology*, p. 278.

general way he gives an elementary outline of the theory.⁸⁴

In Books VIII and IX of the *Nicomachean Ethics*, Aristotle finds the subjective basis of the state and society to be friendship. This is merely an elaboration of the doctrine laid down in the beginning of the *Politics* that man is by nature a social being. Because of his inherent sociability he desires friends and cannot exist happily, if at all, without them. Society or association is the motive of friendship. Friendship is the concrete form in which man's social nature manifests itself.⁸⁵

Aristotle, like Plato, gave license to his imagination in the construction of an ideal commonwealth, but its discussion does not properly come within the scope of this paper. All that is necessary to point out is that, like the conception of Plato, it was to be a small city-state where all the citizens might know each other, and, in spite of Aristotle's criticism of communism, there were traces of it in his ideal state, as for example, in the common meals.⁸⁶ This picture of an ideal state, with its limited Greek horizon and with stability as its ideal, has little more than a curious interest for the modern political student. As Professor Bury says: "The Republic of Aristotle's wish is not quickened like Plato's by strikingly original ideas; it is a commonplace Greek aristocracy, with its claws cut, carefully trimmed and pruned, refined by a punctilious education, without any expensive vitality, and like Sparta leaving no room for the free development of the individual citizens. If the cities of Hellas had been moulded and fashioned on the model of the city of Aristotle, they could hardly have done what they did for European civilization."⁸⁷

⁸⁴ *Politics*, IV, 4. Cf. Spencer, *Principles of Sociology*, Vol. I, Part II.

⁸⁵ *Nicomachean Ethics*, VIII, i, ix; IX, xii.

⁸⁶ *Politics*, VII, 4-15.

⁸⁷ Bury, J. B., *A History of Greece*, p. 835. For Janet's exposition of the political philosophy of Aristotle, see op. cit., Vol. I, pp. 177-255. For later effect of Republic, see Barker, op. cit., pp. 525-530.

VI. POST-ARISTOTELIAN GREEK THEORIES

1. *The Stoics*

Post-Aristotelian philosophy was distributed among some six different schools: the Academy or Sceptics, who followed Plato; the Peripatetics, or followers of Aristotle, who devoted themselves particularly to natural science; the Cynics; the Cyrenaics; the Stoics, and, finally the Epicureans.⁸⁸ It is with the last two only that we are concerned in the history of political thought, and, indeed, they absorbed most of the doctrines of the Cynics and Cyrenaics, respectively. While all these schools were represented by leaders who were prolific writers, practically all the works of the Greek Stoics and Epicureans have been lost, and our main source for their ideas is the miserable gossip collection of fragments compiled by Diogenes Laertius early in the third century A. D. The works of their Roman followers have been better preserved, and we shall take them up later in the discussions of Lucretius and Seneca.

The Stoics were founded by Zeno, who lived from about 350-260 B. C. Their contributions to the theory of social and political origins may be summed up as follows:⁸⁹

(1) The first systematic development of the theory of Natural Law as the dominant force in the universe; applying as well to social relations as to physical forces. (2) The conception of society based upon an "ethical imperative"—a rational perception of their relation to their fellow beings which demanded their participation in society for a two-fold reason: the perfect development of their own personality, and the discharge of their duty towards the

⁸⁸ For the general character of Post-Aristotelian philosophy, see Zeller, E., *Stoics, Epicureans, and Sceptics*, Chaps. I-III.

remainder of society. "They maintained that the state was an organization of human community life, which originates by reason of a social instinct implanted in man by nature."⁹⁰

(3) A conception of a sort of citizenship in the world which broke through the Greek city-state horizon of Plato and Aristotle and might have led to the development of international law, had there been any independent states left, but Rome had absorbed them all.⁹¹ Stein goes so far as to say that the Stoic writings of Cicero and Seneca furnished the main sources for the later development of international law by Hugo Grotius.⁹²

2. *The Epicureans*

Quite different from these doctrines were those of the school of philosophy founded by Epicurus (342-270 B. C.). Epicurus desired to interpret the origin of all things in a purely natural and materialistic manner which would preclude any necessity for supernatural intervention.⁹³ Making use of this rationalistic method of procedure he accounted for the evolution of man from a wild savage to civilization through the process of invention prompted by necessity.⁹⁴ Applying this philosophy to the origin of society and the state, he offers, perhaps, the first theoretical account of the appearance of society and the state through a contract upon the part of the component population of which we have any knowledge in history.⁹⁵ Plato's reference to the contract was simply a description of a govern-

⁹⁰ Janet, op. cit., pp. 256-70. Zeller, op. cit., pp. 293-296. Scherger, G. L., *The Evolution of Modern Liberty*, pp. 18-19. Stein, Ludwig, *Die Soziale Frage im Lichte der Philosophie*, pp. 222-224.

⁹¹ Oppenheimer, Franz, *The State*, p. 4.

⁹² Pollock, op. cit., p. 30.

⁹³ Stein, op. cit., p. 459.

⁹⁴ Zeller, op. cit., p. 410. Stein, op. cit., p. 228.

⁹⁵ Zeller, op. cit., pp. 427-28.

⁹⁶ This might be modified if we knew more about the ideas of the Sophists who are alleged by Barker to have had similar ideas.

mental compact. Diogenes Laertius has preserved for us some alleged sayings of Epicurus on this subject which give a fairly clear idea of his views upon the matter of the state:

Natural justice is a covenant of what is suitable, leading men to avoid injuring one another and being injured.

Those animals which are unable to enter into an agreement of this nature, or to guard against doing or sustaining mutual injury, have no such thing as justice or injustice and the case is the same with those nations, the members of which are either unwilling or unable to enter into a covenant to respect their mutual interests.

Justice has no independent existence; it results from mutual contracts, and establishes itself wherever there is a mutual engagement to guard against doing or sustaining mutual injury.⁹⁶

Granting the possible exception of the Sophists, the Epicureans thus made the first striking statement of the individualistic attitude which appeared in political philosophy. In striking contrast to Plato and Aristotle, Epicurus taught that the interest and happiness of the individual were prior to the interests of the state and that society and the state exist simply for the protection of the individual.⁹⁷ Professor Giddings has summed up this whole matter in an able manner:

With cosmopolitanism, however, came individualism, and with it the final word of Greek philosophy upon social relations. Epicureanism, with its emphasis upon individual initiative and individual happiness, contended that the society is best which imposes minimum restraints upon the individual will. From this doctrine as a premise, the conclusion was inevit-

⁹⁶ Diogenes Laertius, *Lives and Opinions of Eminent Philosophers*, Book X, Chap. xxxi, Secs., 33-35.

⁹⁷ Zeller, *op. cit.*, pp. 462-3. Stein, *op. cit.*, pp. 228-230.

ably reached that social and legal relations rest wholly upon individual self-interest, and the desire of each to secure himself against injury. The true origin of society was therefore to be sought in contract or consent. So the teaching of Plato and Aristotle was turned about. The assumption that society creates and moulds the individual became the dogma that individuals, for individualistic ends, create society.⁹⁸

3. *Polybius*

The last of the Greek writers on political philosophy was the historian Polybius, the first real formulator of historic ideals and methodology.⁹⁹ He wrote his *History* while a hostage in Rome from 167-151 B. C. In the sixth book he makes a digression to explain the causes for the excellence of the Roman system of government. As an introduction to this he gives an account of the origin of society and government, which forms his chief contribution to social philosophy, as his discussion of the "mixed form of government" is his greatest contribution to political philosophy.

Beginning, like Plato, with the premise of a deluge which destroyed the majority of mankind, he traces the genesis of social relations and political organization. The survivors of the deluge multiplied by natural means and from instinct and a sense of weakness sought the society of others of their kind. As among animals, the strongest took the lead. Banding together like animals they followed the strongest and bravest, who set up a despotism based upon physical force. Morality then developed slowly from the punishment of ungrateful individuals by the group. If an ingrate attempted to injure his benefactor the others would imagine themselves in the place of the injured man, would

⁹⁸ Giddings, *Studies in the Theory of Human Society*, p. 103-4.

⁹⁹ Shotwell, J. T., *Introduction to the History of History*, Chap. xvi.

sympathize with him, and wreak vengeance upon the injurer. From a sense of sympathy there thus grows up a conception of duty and justice. The leader of the people, if he ruled according to the principles of justice, would impress the citizens with the fact that he gave every man his just reward, and they would perceive the utility of such political organization and pledge their loyalty to the ruler. Reason thus took the place of instinct and brute force as the basis of government.¹⁰⁰

Polybius next proceeds to classify governments in a manner very similar to that which Plato and Aristotle had adopted, and traces the usual cycle in which these forms supposedly recur. Kingship, the first type, degenerated into tyranny when the kingship became hereditary in a family and there was no longer any need to rely upon the equitable administration of justice for security in holding the office. Then the ruler exploited the kingdom to support himself in luxury and gave no heed to the rights of his subjects. This caused plots against the ruler, and the people, following the lead of the highest-minded citizens, overthrew the dynasty.¹⁰¹ The people, grateful to these leaders for their deliverance, installed them as rulers. This third form of government constituted an aristocracy.¹⁰² The rule was equitable as long as the original aristocrats lived, but their sons, not sharing their fathers' experience of oppression, gave themselves up to unrighteous living and unlawful rule. This type of government constituted the fourth or oligarchy.¹⁰³ The people, then, remembering the experience of their fathers with unjust rule and their own with the oppression of several rulers, dared neither to set up a kingdom or an aristocracy, and so administered the

¹⁰⁰ *The Histories of Polybius*, translated by Shuckburgh, VI, 5-6.

¹⁰¹ *Ibid.*, VI, 7.

¹⁰² *Ibid.*, 8.

¹⁰³ *Ibid.*

government themselves. This fifth type was a democracy.¹⁰⁴ This also went well in the first generation when the memory of oppression was fresh, but the second generation followed their own selfish interests and democracy degenerated into anarchy, the sixth and last type.¹⁰⁵ This period of mob rule ended only when it had evolved another king, and thus the cycle of transformations started again.¹⁰⁶

The only way in which this undesirable cycle could be ended was by combining the best elements of a kingdom, an aristocracy, and a democracy at the same time in one government. This plan, said Polybius, had been devised by Lycurgus at Sparta and had grown up gradually in Rome. At Rome the consuls represented the kingship, the senate the aristocracy, and the people the democracy.¹⁰⁷ This, as Professor Dunning remarks, was the first formal statement of the system of checks and balances in constitutional government;¹⁰⁸ one which was revived by Machiavelli, and was succeeded by the more famous scheme of Montesquieu.

The contributions of Polybius to political science and sociology, which are quite as important as his contribution to history, may be summed up as follows:

(1) An account of social genesis which is in the main points accurate. The congregation of primitive men because of a perception of likeness and a sense of weakness in isolation is a fact beyond dispute. The origin of government, first in force and then strengthened and rendered more permanent by the reflective action of the social mind when it perceived the utility of such relations, is in accordance with the views of the best scholars of the present day. It was this same line of argument which David Hume used

¹⁰⁴ *Ibid.*, 9.

¹⁰⁵ *Ibid.*

¹⁰⁶ *Ibid.*

¹⁰⁷ *Ibid.*, 11-15.

¹⁰⁸ Dunning, *op. cit.*, p. 117.

nearly two thousand years later in his attack upon the doctrine of the origin of society and government through a social contract.¹⁰⁹

(2) An account of the origin of morality and justice through the group sanction or disapproval of certain practices detrimental to the supposed welfare of the group. This is also in accord with the best modern opinion and has been made the central thesis of two very able modern sociological works—the *Physics and Politics* of Bagehot, and the *Folkways* of Professor Sumner.

(3) The first clear statement of the theory of reflective sympathy as the subjective basis of social relations. This theory was later developed by Spinoza, Hume, and Adam Smith and was the basis of Professor Giddings' earliest theory of society.

(4) The first comprehensive statement of the theory of the necessity of checks and balances in preserving a stable form of government.¹¹⁰

VII. LUCRETIUS

Polybius was the last of the Greek social philosophers. While it seems that from what evidence we have the Romans contributed little to social philosophy as regards original theories, nevertheless it is among the Roman followers of the later Greek schools of philosophy like the Stoics and Epicureans that we have to look for our most complete statements of the Greek theories, modified, no doubt by Roman atmosphere, but the best information of the kind that remains. The minds of the Romans were of a legal and practical character, little given to construc-

¹⁰⁹ Hume, David, *Essays, Moral, Political, and Literary* (ed. Green and Gross), Vol. I, pp. 113-117.

¹¹⁰ For Janeet's excellence summary, see op. cit., Vol. I, pp. 270-74.

tive speculative philosophy. Says Pollock: "The Romans were great as rulers and administrators, and they created systematic law. But in philosophy they were simply the pupils and imitators of the Greeks, and showed themselves as little capable of invention in politics as in any other branch."¹¹¹

The chief representative in Rome of the Epicurean school was the philosophic poet Lucretius (circa 99-55 B. C.), the greatest mind that the Roman people produced. So little remains of the writing of Epicurus that certainty cannot be reached as to the degree of originality possessed by Lucretius.¹¹² It is apparent that Lucretius adopted the general philosophical system of Epicurus and admitted his discipleship with pride. If, as Pollock states, statesmen should go back to Aristotle, so anthropologists and ethnologists should return to Lucretius, if not to ascertain scientific truth on every occasion, at least to find a remarkably close approximation to what recent researches have revealed on the subject of the early history of man.¹¹³

Lucretius considered that the idea of the existence of the world "from all eternity" was an untenable position and held that it must have had a relatively recent origin.¹¹⁴ All animals, including man, he held had sprung from the earth, generated by the moisture of the earth and the heat of the sun. He clearly discerned the meaning of the struggle for existence, declaring that some species had been preserved rather than others because of their superior craft, courage, or activity.¹¹⁵ The early race of men was strong of stature, hardy, and little affected by the elements. They obtained their food at first by direct appropriation from berries and

¹¹¹ Pollock, op. cit., pp. 31-32.

¹¹² See Masson's classic exposition of Lucretius.

¹¹³ Haddon, A. C., *A History of Anthropology*, pp. 122-4.

¹¹⁴ Lucretius, *De Rerum Natura*, V, 325-350. (Trans. by Watson, Bohn Lib.)

¹¹⁵ Lucretius, op. cit., V, 838-868.

acorns, and dwelt in caves and thick forests.¹¹⁶ Mere sexual instinct, devoid of sentiment, caused the propagation of the species. Soon they armed themselves with clubs and stones, captured the wild beasts for food, and used their skins for clothing; these beasts being at the same time the greatest enemies of mankind.¹¹⁷ In time, man came to have a hut for a place of abode and took a wife to dwell with him in a comparatively permanent matrimonial arrangement. Family life softened the rude nature of primitive man, and neighbors, feeling their mutual needs and interests, made agreements to refrain from injuring each other. Justice had its origin in sympathy or pity for the weak. This social concord Lucretius did not think universal, but held that it must have been the case with the greater part of mankind, or else the species could not have maintained its existence.¹¹⁸ The leaders in this primitive society, who were first chosen for their beauty and strength, soon began to build cities, and to fortify them, and to distribute cattle and fields among their retainers. Soon wealth became more important than either strength or beauty in determining leadership. The wealth of the early kings, however, aroused the envy of the rest, and the less fortunate "rose up against them" and slaughtered them, and government, forthwith, degenerated into anarchy. But the wiser men led the rest of the people into making a compact for mutual protection and the insuring of order, and the people, worn out with violence, readily acquiesced in this plan.¹¹⁹ The state and stable government were thus established by means of a mutual compact. Lucretius' description of the origin of government is worth quoting, for it is the first statement

¹¹⁶ Ibid., 920-956. Lucretius allowed no place for the primitive "Golden Age" later premised by Seneca and the Fathers.

¹¹⁷ Ibid., 970-1007.

¹¹⁸ Ibid., 1007-1040.

¹¹⁹ Ibid., 1115-1170.

of this theory which has come down in any degree of fullness:

At length the leaders began to build cities, and to found fortresses, as a protection and refuge for themselves. They also divided the cattle and fields, and allotted them according to the beauty, strength and understanding of each individual; for beauty was then much esteemed, and strength had great influence. Afterwards wealth was introduced, and gold brought to light, which easily robbed the strong and beautiful of their honor; for men, however strong, or endowed with however beautiful a person, generally follow the party of the richer. . . .¹²⁰

Kings, therefore (Lucretius explains in a passage which has been omitted how the wealth of the kings attracted envy and brought about their downfall) being deposed and slain, the ancient majesty of their thrones, and their proud scepters lay overthrown in the dust; and the illustrious ornament of the royal head, stained with blood beneath the feet of the rabble, mourned the loss of its supreme honor; for that which has been too much feared before, is eagerly trodden down.¹²¹

Power, accordingly, returned to the lowest dregs and rabble of mankind, while each sought dominion and eminence for himself. But at length the wiser part taught them to establish a government, and made laws for them, that they might consent to observe order; for mankind, weary of passing their life in a state of violence, were worn out with contentions; on which account they fell submissively under the power of laws and strict ordinances. For because every one in his resentment, prepared to take revenge for himself more severely than is now allowed by equitable laws, men, for this reason became disgusted with living in strife.¹²²

¹²⁰ Ibid., 1105-1121.

¹²¹ Lucretius in this sentence shows that he understood the elementary principle of the psychology of revolutions.

¹²² Lucretius, *op. cit.*, V, 1130-1150.

VIII. CICERO

But powerful a thinker as Lucretius was, he never had a great influence upon posterity. The Epicurean theories were too advanced for the Roman mind to grasp, and the Epicurean doctrines were, of course, quite repugnant to the Christian writers because of their denunciation of "religio" as the chief cause of human misery.¹²³ So it is to Cicero, a would-be eclectic with strong Stoic leanings, and Seneca, a professed Stoic, that we must turn to gather what were the general views on political theory held at Rome between 100 B. C. and 100 A. D. Carlyle says on this point: "Cicero has left us in the fragments of the 'De Republica' and in his treatise 'De Legibus' a very interesting and significant account of the political theory fashionable in the first century before our era; while Seneca's writings serve to illustrate some general tendencies of political thought one hundred years later. With the assistance of these writers we can in some measure reconstruct the general outlines of the political conceptions which influenced the Lawyers and the Fathers. We can at least learn from them the commonplaces of political philosophy in their days, the notions current among the educated men of the period."¹²⁴

While opinions may differ as to the degree of originality possessed by Cicero, most writers agree that it was not great, and many deny him any at all. Pollock says that "Nobody that I know of has yet succeeded in discovering a new idea in the whole of Cicero's philosophical writings, and the portions of his work on the 'Commonwealth' which have come down to us are no exception to this."¹²⁵ Profes-

¹²³ See Ibid., 1160-1207.

¹²⁴ Carlyle, A. J., *A History of Medieval Political Theory*, Vol. I, p. 3.

¹²⁵ Pollock, op. cit., p. 32. Cf. Willoughby, *Political Theories of the Ancient World*, pp. 288-9.

sor Dunning is a little more charitable to Cicero, and says: "That the thought of Cicero follows very closely to the suggestions of Polybius cannot be denied, but to conclude that the Roman made no contribution to political science beyond that of the Greek is a step hardly warranted by the facts."¹²⁶ But whether or not Cicero was at all original, he is valuable as a sort of general repository of earlier Greek philosophy. Carlyle has well stated his significance in political philosophy: "Cicero is a political writer of great interest, not because he possesses any great originality of mind, or any great power of political analysis, but rather because in the eclectic fashion of an amateur philosopher, he sums up the commonplaces of the political theories of his time. When we read him we feel that we learn not so much what Cicero thought as what was generally current in his time."¹²⁷

But when we come to attempt to organize Cicero's political theories, we find that his very eclecticism, however valuable it may be in preserving the general sum of current political theory, is a source of considerable confusion because of conflicting opinions and his non-committal attitude when presenting several different views.¹²⁸ "It must be remembered that Cicero's eclecticism is in part the expression of a certain incoherence in his philosophical conceptions, and that it is not a matter for any great surprise that we should find him holding together opinions hardly capable of reconciliation."¹²⁹

Cicero is familiar with two conceptions of the origin of the state: (1) the Epicurean doctrine of the non-sociability of man by nature and the growth of society and the state out of the utility of mutual defence; and (2) the Aristote-

¹²⁶ Dunning, *op. cit.*, p. 121.

¹²⁷ Carlyle, *op. cit.*, pp. 3-4.

¹²⁸ Warde Fowler has pointed out Cicero's similarly changing views on the nature of religion in his *Religious Experience of the Roman People*, p. 387.

¹²⁹ Carlyle, *op. cit.*, p. 12.

lian and Stoic conception that man is naturally inclined to the society of other men.¹³⁰ It seems reasonable to suppose on the basis of the general nature of his writings that Cicero supported the Stoic position. He says regarding the Epicurean doctrine in his *De Officiis*, where he follows Panaetius: "Neither is that maxim true which is affirmed by some, that human societies and communities were instituted from the necessity of our condition, because we cannot without the help of others supply what our nature requires."¹³¹ Cicero, on the other hand, holds that society is a natural institution. Man being made for society, that greatest society—the state—has grown gradually from that elementary form of association, the family. Participation in a state is the natural method of human life, and the state cannot be considered as any chance association¹³² of men with diverse objects and methods, but a state must be an association founded upon justice and law, and have for its purpose the furthering of the well-being of all the citizens. Though the form of government may vary, the state must always be founded upon the basis of justice and the common well-being. Government, whether in the hands of one, a few, or all, is legitimate if the original bond of justice and common welfare is preserved. An unjust government is not to be designated as merely corrupt; in reality, such conduct dissolves the very state itself.¹³³ This is the main substance of Cicero's thought on the origin and nature of the state. We may now examine some specific points more in detail.

Cicero gives two distinct, but on the whole harmonious, accounts of the origin of society and the state; one in Book I, Chaps. xxv-xxvi of his *De Republica*, and the other in

¹³⁰ Carlyle, *op. cit.*, p. 13.

¹³¹ Cicero, *De Officiis*, Book I, Chap. xlv. (Trans. Edmunds, Bohn Library.)

¹³² Cf. Rousseau, *Social Contract*, Book I, Chap. 5.

¹³³ Carlyle, *op. cit.*, pp. 14-15.

Book I, Chap. xvii of his *De Officiis*. In the *De Republica* he follows Aristotle in the belief in the inherent sociability of man, and premises the origin of human society in the gregarious instinct in mankind rather than in a perception of the mutual utility of associated activity. In support of this theory he points to the fact that men are so constituted that they spontaneously seek society, even when possessed of an abundance of material wealth and in no need of mutual assistance. This social instinct also leads men to form a type of governmental organization, so that the social unity may be preserved. The location of the headquarters of the social group will be determined by natural conditions, a strong central position, fortified by nature would of course be the ideal situation.¹³⁴ Cicero states the above conclusions in the following manner:

A commonwealth is a constitution of the whole people. But the people is not every association of men, however congregated, but the association of the entire number, bound together by the compact of justice, and the communication of utility. The first cause of this association is not so much the weakness of man, as a certain spirit of congregation which naturally belongs to him. For the human race is not a race of isolated individuals, wandering and solitary; but is so constituted that even in the affluence of all things, and without any need of reciprocal assistance, it spontaneously seeks society.

It is necessary to presuppose the original seeds of a commonwealth as it were, since we cannot discover any primary establishment of the other virtues, or even of a commonwealth itself. These unions, then, formed by the principle which I have mentioned, established their headquarters originally in some central positions, for the convenience of the whole population; and having fortified them by artificial and natural

¹³⁴ Cicero, *De Republica*, Book I, Chaps. xxv-xxvi. (Trans. Yonge, Bohn Lib.)

means, they have called this collection of houses a town or city, distinguished by temples and public squares. Every people, therefore, which consisted of such an association of the entire multitude as I have described—every city which consists of an assemblage of the people—and every commonwealth which embraces every member of these associations—must be regulated by a certain authority in order to be permanent. This intelligent authority should always refer itself to that grand first principle which established the commonwealth. It must be deposited in the hands of one supreme person, or entrusted to the administration of certain delegated rulers, or undertaken by the whole multitude.¹³⁵

Following Polybius, Cicero indicated his preference for the mixed form of government, but showed that he considered the monarchy the best alternative.¹³⁶

In his *De Officiis*, Cicero gives both an objective description of the genetic growth of society and a subjective interpretation of society in terms of friendship and like-mindedness. He shows his belief that the commonwealth grows out of the family through the gradual expansion of the latter. He praises the society of those of the same manners, emphasizes the value of like-mindedness in society, points out that friendship is a most important constitutive force in society, and shows that the greatest friendship can take place only among those who are like-minded.¹³⁷ In all this emphasis upon like-mindedness, Cicero reminds one of Professor Giddings' insistence upon the necessity of this factor in any stable society. Cicero puts these doctrines as follows:

For as it is a common natural principle among all animated beings that they have a desire to propagate their own species, the first principle of society consists

¹³⁵ *Ibid.*, I, xxv-xxvi.

¹³⁶ *Ibid.*, I, xlv.

¹³⁷ *De Officiis*, Book I, Chap. xvii.

in the marriage tie, the next in children, the next in a family within one roof, where everything is in common. This society gives rise to the city, which is, as it were, the nursery of the commonwealth. Next follow the connections of brotherhood, next that of cousins; and when they grow too numerous to be contained under one roof, they are transplanted to different dwellings, as it were to so many colonies. Then follow marriages and alliances, whence spring more numerous relationships. The descendants by this propagation from the origin of commonwealths; but the ties and connections of blood bind mankind by affection. For there is something very powerful in having the monuments of our ancestors the same, in practising the same religious rites, and in having the same places of interment. But among all the degrees of society none is more excellent, none more stable, than when worthy men, through a similarity of manners, are intimately connected together; for as I have often said, even when we discern the "honestum" in one another it touches us, and makes us friends to the man in whom it resides.

Now though every virtue of every kind attracts and charms us to the love of those who possess it, yet that love is strongest that is effected by justice and generosity. For nothing is more lovely, nothing more binding, than a similarity of good dispositions; because among those whose pursuits and pleasures are the same, every man is pleased as much with another as he is with himself, and that is effected which Pythagoras chiefly contemplates in friendship, "that many may be one." A strong community is likewise effected by good offices mutually conferred and received; and, provided these be reciprocal and agreeable, those amongst whom they happen are bound together in close association. . . . And those friendships are most agreeable that are cemented by a similarity of manners.¹³⁸

¹³⁸ Ibid., I, Chap. xvii.

Thus, as Carlyle puts it, to Cicero, "The commonwealth is an organic development out of the natural association of the family, and at the same time it is the expression of the consent of the common will, for every citizen has his share in its control."¹³⁹

In his conception of the growth of the commonwealth, Cicero approaches Burke's thesis that the state is an organic growth rather than a mechanical product.¹⁴⁰ He describes this gradual development of the Roman constitution in much the same terms as Burke pictured the growth of the English system in his polemic against the French Revolution.¹⁴¹ "But our Roman Constitution, on the contrary, did not spring from the genius of one individual, but from that of many, and it was established not in the lifetime of one man, but in the course of several ages and centuries. For added he (Scipio) there never yet existed any genius so vast and comprehensive as to allow nothing at any time to escape his attention, and all the geniuses in the world united in a single mind, could never within the limits of a single life, exert a foresight sufficiently extensive to embrace and harmonize all, without the aid of experience and practice."¹⁴²

Finally, in his analysis of slavery, Cicero seems to give some ground for the opinion that he foreshadowed the ideas of Seneca and the "Fathers," namely, that human institutions grew out of the necessity of checking the evils of human nature, and hence the state must be an organization which grew up in consequence of the depravity of human nature and as a remedy for it.¹⁴³ While Cicero may have held that slavery grew out of human depravity, he certainly did not hold in common with Seneca and the

¹³⁹ Carlyle, *op. cit.*, p. 17.

¹⁴⁰ *Ibid.*, pp. 13-14.

¹⁴¹ Burke, Edmund, *Reflections on the French Revolution*.

¹⁴² Cicero, *De Republica*, Book II, Chap. 1.

¹⁴³ Carlyle, *op. cit.*, pp. 11-13.

"Fathers" the view that the state was a product of human depravity, but rather regarded it as the noblest work of man.¹⁴⁴

IX. SENECA

We now come to a consideration of Seneca (3 B. C.-65 A. D.), who gives us a picture of the political theories of a century later than that of Cicero, as they appeared to a Stoic philosopher and statesman. Seneca was no more a profound philosopher than Cicero and, like the latter, tended to be a rhetorician, but nevertheless he is more consistent than Cicero, being a professed adherent to a single philosophical school—that of the Stoics. While Cicero probably could more accurately be classed as a Stoic than anything else, still his alleged scepticism and eclecticism gave him a freedom and inconsistency quite unlike that of Seneca. Says Carlyle: "He (Seneca) presents to us in a literary form, always interesting and sometimes forcible, the theory of life and society of the Stoic schools of his time, and he presents them with a certain coherence and consequence which differs not a little from Cicero's expression of the preferences of a well-mannered and honorable-minded philosophical amateur."¹⁴⁵

The great difference between Seneca and Cicero is the elaboration by the former of the fateful idea of a primitive state of society, a "Golden Age," which was followed by the era of the origin of the conventional institutions of society, as a remedy for the evils which brought this age to an end. "The most important difference between Seneca and Cicero is to be found in his developed theory of the primitive state of innocence, the state before the conven-

¹⁴⁴ *Ibid.*, pp. 13-15.

¹⁴⁵ Carlyle, *op. cit.*, p. 19.

tional institutions of society existed, and the consequent theory that these institutions are only the results of, and the remedies for, the vices of human nature."¹⁴⁶ This was a very significant doctrine, for it was taken up by the "Fathers" and had considerable vogue all through the early Middle Ages.

Seneca rarely refers to a law of nature, but he frequently refers to nature itself as that perpetual and unchanging test of excellence to which men must conform if they are to realize the true end and enjoyment of life. "In the main, he seems to conceive of it (nature) as the permanent principle and end of life, not as identical with its primitive forms. We shall have to consider the question presently in relation to his conception of the primitive character of society, and we shall see then that while he may occasionally, at least, use the word 'nature' as representing the primitive, yet his general tendency is to look upon the completest perfection of human nature in a developed society as being the true 'nature' in man."¹⁴⁷

In Epistle 2 of Book XIV of his *Epistularum Moraliū*, Seneca sets forth his theory of the primitive condition of society in the Golden Age of pristine innocence. In this period of primordial felicity, mankind lived without coercive authority, gladly obeying the wise, and without distinctions of property or caste. His explanation of the course of events which brought about the transition from this primitive stage to modern society is strikingly like that given by Rousseau in his *Discourse on the Origin of Inequality Among Men*. The main cause for the breakdown of the primitive arrangements was the origin of private property. The people became dissatisfied with the common ownership, and the resulting lust after wealth and authority rendered necessary the institution of political

¹⁴⁶ Ibid., p. 31.

¹⁴⁷ Ibid., p. 20.

authority to curb the lusts of man.¹⁴⁸ Carlyle has epitomized this famous letter as follows:

Before the existing age there was an age when men lived under other conditions; in other circumstances; an age which was called the golden. In this primitive age men lived in happiness and in the enjoyment of each other's society. They were uncorrupt in nature, innocent, though not wise. They were lofty of soul, newly sprung from the gods, but they were not perfect or completely developed in mind and soul. They were innocent, but their innocence was rather the result of ignorance than of virtue; they had the material out of which virtue could grow rather than virtue itself, for this properly belongs only to the soul trained, and taught, and practised: men are born to virtue, but not in possession of it. . . . In this primitive state men lived together in peace and happiness, having all things in common; there was no private property. We may infer that there could have been no slavery, and there was no coercive government. Order there was of the best kind, for men followed nature without fail, and the best and wisest men were their rulers. They guided and directed men for their good, and were gladly obeyed as they commanded wisely and justly. The heaviest punishment they could threaten was expulsion from their territories. . . . As time passed, the primitive innocence disappeared; men became avaracious, and, dissatisfied with the common enjoyment of the good things of the world, desired to hold them in their private possession. Avarice rent the first happy society asunder. It resulted that even those who were made wealthy became poor; for desiring to possess things for their own, they ceased to possess all things. The rulers grew dissatisfied with their paternal rule; the lust of authority seized them, and the kingship of the wise gave place to tyranny, so that men had to create laws which should control the rulers.¹⁴⁹

¹⁴⁸ Cf. Rousseau, *op. cit.*, beginning of part 2.

¹⁴⁹ Carlyle, *op. cit.*, pp. 23-24.

Several points in this theory of Seneca regarding the origin of social and political institutions are worthy of notice. In general, the whole doctrine is one which is to be condemned without qualification; like the Christian doctrine of the "Fall," the doctrine of a primitive golden age stands diametrically opposed to any valid theory of human progress. All progressive theories must look to the future as the source of their hope and not cast longing eyes back to a mythical golden past. Seneca is, however, less to be condemned than some later defenders of the excellence of the state of nature. Seneca held that this primitive period was essentially an undeveloped epoch rather than an ideal one, while many later writers regarded the primitive condition as the natural in the full sense of the word.¹⁵⁰ Nevertheless, Seneca held that untenable view of social institutions as a device for controlling human wickedness resulting from the corruption of man, rather than as a means for securing greater happiness and social efficiency. "Seneca thus looked upon the institutions of society as being the results of vice, of the corruption of human nature: they are the conventional institutions made necessary by the actual defects of human nature rather than the actual conditions of ideal progress."¹⁵¹

In his *De Clementia*, I, Seneca shows a decided bent towards the theory of the divine source of government and the divine authority of the ruler-doctrines very common in the Patristic period.¹⁵²

Seneca is particularly important in the history of political theories because he was the source for a great deal of the political doctrine of the Church Fathers. They felt perfectly free to draw upon him, for his writings on religion bears a close resemblance to the Christian conceptions,

¹⁵⁰ Ibid., p. 24.

¹⁵¹ Ibid., p. 24.

¹⁵² Ibid., p. 31.

which has led to a wide-spread myth that he was a friend of St. Paul. Seneca's doctrine of the corruption of human nature, combined with the doctrine of the primitive state of innocence, was admirably adapted to a transformation into the Christian doctrine of the bliss of Eden and the subsequent fall. Says Carlyle: "We have already seen in Cicero some traces of this theory of the corruption or faultiness of human nature; in Seneca it is more clearly and explicitly drawn out. And if we now put this together with his theory of primitive life, we see that Seneca's view is, in all important points, the same as that of the Christian Fathers, that man was once innocent and happy, but has grown corrupt. And further, we find that what Cicero only suggests as the cause of the subjection of man to man, Seneca holds of the great institutions of society, property and coercive government; namely, that they are the consequences of and the remedies for vice."¹⁵³ As has been stated, with the "Fathers" Seneca's conception of the primitive golden age was transformed into the conception of the condition of mankind before the fall. "The Fathers conceive of the state of man before the fall much as Seneca conceives of the Golden Age, and they account for the disappearance of the primitive conditions of that age by the theory of the Fall. By the Fall man passed out of the state of nature into the state in which the conventional institutions of society are necessary."¹⁵⁴ This influence of Seneca did not extend merely to the earlier Fathers, but, as Carlyle points out, it was still strong at the time of Gregory the Great. "It is probable that Gregory the Great is here following St. Augustine, but the general source of the authority can hardly be mistaken; it is the same Stoic doctrine of a primitive state in which the conventional institutions of

¹⁵³ Ibid., p. 25.

¹⁵⁴ Ibid., p. 117. For a brief survey of the views of the Fathers on these questions, see *Open Court*, February, 1923, pp. 97-108.

society did not exist, of which we have already spoken so often. The primitive state of man was to these Fathers, as it had been to the Stoics like Posidonius and Seneca, a state without coercive government: in the state of nature men did not need this."¹⁵⁵ Like Seneca, the Fathers did not conceive of coercive government as existing in the state of nature. It was occasioned by sin, but it was not illegitimate; rather it was a divinely appointed remedy for sin.¹⁵⁶

But not only was Seneca influential in the Patristic period; Stein has pointed out how the Stoic doctrines, with their ideas of the brotherhood of man, were able to furnish the basis for the system of natural law philosophy and international law which grew up in early modern Europe. "*Seneca's Schriften und Cicero's 'De finibus' insbesondere auch dessen 'De officiis' (bekantlich nur eine freie Uebersetzung einer Schrift des Panaetius) bilden die Quellen aus denen Grotius seine Naturrechtslehre geschöpft hat.*"¹⁵⁷

HARRY ELMER BARNES.

SMITH COLLEGE.

¹⁵⁵ Ibid., p. 127.

¹⁵⁶ Ibid., p. 128.

¹⁵⁷ Stein, Ludwig, *De Soziale Frage im Lichte der Philosophie*, p. 459.

For a treatment of the theory of political origins set forth by the Roman Lawyers, see Carlyle, pp. 35ff., and Willoughby, *Political Theories of the Ancient World*, pp. 249-68. The most important contribution to the subject which they made was to stress the theoretical basis of political authority in the will of the people, and to elaborate the doctrine of a state of nature antecedent to positive social and political institutions.

THE STRUCTURE OF EXACT THOUGHT

AN INTERESTING and remarkable experiment in the nature of mathematical thinking and the philosophy of certain thought processes was recently performed at Princeton University by a class of graduate students in Projective Geometry under the direction of Professor O. Veblen.¹ It originated in the desire to emphasize the point that our logical processes may be independent of any particular set of mental images associated with the objects of thought and that they may in fact be performed without any knowledge of concrete objects to which the primitive propositions or postulates refer. The instructor proposed to the class that certain members should make up a set of postulates giving properties sufficient to characterize some set of objects chosen by them and that these postulates should be submitted to the remainder of the class, the latter to proceed to the explicit determination of the nature of the set of objects without any further information concerning them than what was contained in the propositions of the set of postulates. The challenge to these latter students was to make logical deductions from the given postulates and to derive theorems concerning the objects referred to in them until they had learned enough about these objects to know what the postulate makers had in mind when they framed the postulates.

¹ See *American Mathematical Monthly*, Vol. 29 (Oct., 1922), pp. 357-358.

Of this experiment, Professor Veblen has written as follows: "The exercise was a success in showing how mathematical deductions can be made without knowledge as to what one is reasoning about. It also brought out vividly the problem of the significance of the logical processes as a method of discovery. While there is a sense in which it is true that you cannot get anything out of a set of postulates except what has been put in them, you can at least find out what was put in them. This is what the solver of this problem has to do in a simple case. In the more complicated case of ordinary geometry, the student is apt to think that he understands what is in the axioms, but every time that he witnesses the derivation of a new theorem it turns out that there was something in them that he had not seen before."

The experiment was not recorded in exactly the form in which it was made owing to the fact that the framers of the system of postulates included in their given system one postulate which could be deduced from the remaining ones and was therefore redundant. This redundant proposition was omitted from the set as printed (*loc. cit.*). The perfected set of postulates may be set forth as follows:

Let S be a class the elements of which are denoted by the symbols A, B, C, \dots . What these elements are is not stated; but relations among them are to be given in the system of postulates. Furthermore, it is necessary to consider certain undefined sub-classes of S (classes consisting of a part only of the elements of S), any one sub-class of which we shall call an m -class. Two m -classes with no element in common are called conjugates. Concerning the elements and m -classes of S the following properties are postulated:²

² The reader may compare this set of postulates with another given in my article, "Concerning the Postulational Treatment of Empirical Truth," *The Monist*, Oct., 1923, pp. 513-556. In this, I have set forth more details of the method of treatment than I shall give in the present case.

I. If A and B are distinct elements of S, there is at least one m-class containing both A and B.

II. If A and B are distinct elements of S, there is not more than one m-class containing both A and B.

III. For every m-class there is at least one conjugate m-class.

IV. For every m-class there is not more than one conjugate m-class.

V. There exists at least one m-class.

VI. Every m-class contains at least one element of S.

VII. Every m-class contains not more than a finite number of elements.

The problem set to those to whom these postulates were submitted was to develop the miniature mathematical science based on them and in particular to develop a sufficient number of theorems to prove that the set of assumptions is categorical and to give a concrete interpretation of the set S which satisfies them and to prove that the set is independent. Among the definite questions which would be answered by such an analysis are the following: How many elements are there in S? How many m-classes are there in S, and how are the elements of S distributed among these m-classes? How may it be shown that the answers to the foregoing questions would be different if any one of the given postulates should be omitted and the remaining six should be retained? (The reader who wishes to see some of the details of the treatment of a similar problem will find them in the article of mine to which I have already given reference.)

It is recommended to the reader that he investigate the processes of proving theorems by means of abstract propositions by deriving for himself some at least of the consequences of the foregoing set of postulates. That they deal with a subject matter which is almost trivial in itself need

not disturb him; for the thing in consideration is not the subject matter of the miniature mathematical science in question, but the processes of thought by which one proceeds from proposition to proposition in dealing with undefined terms and relations.

For the convenience of the reader, we shall state here (without proof) the principal theorems in an order in which they may be readily proved. He is advised to work the theory out for himself before reading the theorems as given here. (1) Every *m*-class contains at least two elements. (2) The class *S* contains at least four elements. (3) The class *S* contains at least six *m*-classes. (4) No *m*-class contains more than two elements. (5) The elements of *S* and the *m*-classes of *S* are simply isomorphic with the elements *A*, *B*, *C*, *D* and the sets *AB*, *AC*, *AD*, *BC*, *BD*, *CD*. (6) Each postulate in the set is independent of the other six.

The processes of thinking involved in the proofs of these propositions (or in similar proofs of theorems of like character given in detail in my article already mentioned) are exact in the sense that they lead necessarily to the conclusions stated in the theorems in such way that no one can doubt that the conclusions are true, even though he may not know of any concrete representation or interpretation of the system of postulates at the time when he thinks through the proofs of the theorems. It is important to the philosophy of thought and to the psychology of abstract thinking to have a comprehensive analysis made of the processes by which one reasons in dealing with an abstract doctrine of the sort here indicated.

It is important to realize that such processes of thought are not confined to artificial examples such as that given here. These are of the same sort as (a part of) those employed in dealing with any abstract mathematical disci-

pline from the point of view of a postulational treatment. This is precisely the way in which the whole theory is developed in the remarkable *Projective Geometry* of Veblen and Young. It was for the purpose of leading to a better understanding of the processes involved in that extensive work that Professor Veblen proposed the experiment of which we have given an account.

Before leaving this experiment, it is desirable to inject one other remark suggested to Professor Veblen by means of these miniature mathematical sciences. It may be attached to the arguments by which one would develop the theory connected with the set of postulates obtained from the foregoing on replacing the seventh one by the following: No m -class contains more than six elements. It is evident that we should have precisely the same theorems as before. The mathematical science based on the postulates could then be developed completely without counting beyond some small number, let us say, 24. The question arises as to what is the structure of the thought involved in developing this miniature science. How much of logic is needed in this process? If one singles out the principles of logic so employed will they give us so to speak a miniature logic in the same sense as that in which the set of postulates leads us to a miniature mathematical science? What processes of logic would be omitted if one formed such a miniature logic? "What sort of logic results if the omitted processes are replaced by others?" "If it should turn out that the logic required for a satisfying theory of this finite system (or any other particular system as, for example, a particular finite projective space) stops short of that required for larger systems, we would be in the presence of a criterion for the classification of logical processes which might help toward deciding the question as

to what logical processes are legitimate in dealing with various types of infinite sets."

To go into a discussion of all of these questions would carry us aside from the main purpose of this article. But an analysis of the structure of the thought processes employed in developing a miniature mathematical science and of the principles involved in the logic by which the conclusions are reached does belong definitely to our present enterprise. This we shall pursue further when our main problem is more completely formulated.

Before taking our leave of the example, however, let us consider one more question raised by it, namely, the question as to how nearly all the mathematical theory of a postulational treatment is contained in the postulates themselves or the sense in which it is contained in them. This is a difficult question and has given rise to a great deal of discussion. At one extreme it has been urged that a mathematical science so developed is merely an extended tautology. Others have maintained that actual novelties have appeared and do appear regularly in the development of a mathematical doctrine even when it proceeds by a strict dependence on a postulational basis. There is certainly a sense in which the miniature mathematical science in consideration is contained in the postulates; for, from the postulates alone those who did not know to what they referred were able to proceed to a complete characterization of the science as an abstract science. In what sense, if any, did those who worked out the theorems discover or reveal something about the miniature science in consideration?

Let us first describe the novelties of the process on the lowest possible level and let us see that even on this level the developed science is not a tautology. This can be brought out best by means of a comparison with a corresponding process in physical science. Let us suppose that

the chemist is investigating the properties of some particular substance, as lead, for instance. Once he has defined lead sufficiently to enable him always to determine whether a given substance is lead or not, it may be said in one sense that the properties utilized in his definition completely characterize the substance and that in our world as it exists now he has given by his definition all the properties of lead. But it is clear from experience that this is only a partial truth. For this same chemist may proceed with the study of lead and discover many properties of it that he had not at first recognized as its properties. When a piece of lead is given to him he is given implicitly all the properties of lead other than those which belong to it in virtue of its relation to other substances. But so far as his understanding of it is concerned, he is far from being in possession of all the knowledge concerning it which he is able to procure.

So it is with a system of postulates; so it was in particular in the case of the experiment which we have been discussing. In some sense what is implied by the set of postulates is intimately bound up in them; for these implications are seen to be necessary. But with respect to the knower's explicit knowledge of the miniature mathematical science based on the postulates the matter is very different. When he first examines the postulates he is quite unable to see directly what is involved in them. It is only after a step-by-step analysis and reasoning that he can come to see what the situation is in its fullness and in precise interpretation. After such an analysis the knower has a much more precise knowledge of the whole system than any which is conveyed explicitly by the set of postulates as they were first stated. From the point of view of the knower's conception of the science the matter after the argument is certainly very different from what it was

before. By reasoning new knowledge has been obtained in just as true a sense as that in which new knowledge is attained by the chemist when he investigates experimentally the properties of lead.

But this is not all. The knowledge of which we have spoken so far is knowledge of the abstract mathematical science which is based on the given set of abstract postulates. There is something of the character of concrete interpretation which is still to be examined. The miniature mathematical science which we have had in consideration is perhaps too simple and too brief to enable us to bring out the point by means of it. Let us go over then to the case of an abstract postulational treatment of Euclidean geometry by means of a set of postulates. For definiteness let us take the famous postulates of Hilbert. These will serve well the purpose of the non-mathematical reader since they have been set forth in a form accessible to such a reader and discussed in considerable fullness by Professor C. J. Keyser in his *Mathematical Philosophy*. The treatment given by Professor Keyser will make abundantly clear in detail the significance of the general remarks which are now to be set forth concerning one element in the character of the results obtainable through a postulational treatment.

When one has set up a system of postulates in abstract form to underlie any given comprehensive mathematical discipline one always finds that these postulates have not only the concrete interpretation from which their author started in formulating them, but also many other concrete interpretations. Some of these latter look very little like that which formed the starting-point of the investigation. It is not difficult for one to convince himself that the number of concrete interpretations is infinite. (See a discussion of this in the book just mentioned.) The investigator

does not need to carry all these interpretations in mind, nor indeed to know all of them, when he is carrying out the arguments by means of which the theorems in the abstract science are proved. In fact, as we have seen vividly from the experiment of which we have treated, it is not necessary for the investigator to have in mind any concrete representation of the abstract science at the time when he develops the theorems of the science. The doctrine may be developed in detail with only a single concrete interpretation in mind or even with none at all in mind.

Now as the theorems in this abstract science are developed and the science grows to comprehensive proportions experience has shown that the investigator comes after a time to see additional concrete interpretations of it. He finds other sets of objects, besides those at first in mind, for which all the original postulates are verified. He may do this in many different ways; in fact, he has done so in the case of Euclidean geometry, as Professor Keyser has shown. It is his usual experience in dealing with an abstract mathematical doctrine. For every new interpretation he finds, he knows at once without further analysis that all the theorems already obtained are true. His knowledge here is increasing in a way which is far from tautological. It begins to rise toward the level of creative grandeur; for he is finding, or perhaps creating, comprehensive disciplines whose existence was not seen till he recognized them as present to his thought as concrete interpretations of the abstract science which he was developing.

But this does not yet show the full reach of the novelties which emerge in the process of exact thinking on the basis of a system of postulates. If one examines such a system as that of Hilbert, for instance, or indeed any other which pertains to a comprehensive discipline, he will find that there are some which refer to formative processes, processes by which

other objects of thought may be constructed from those objects which are given or have already been constructed.³ From triangles one may thus construct polygons and then generalize the properties of triangles to corresponding properties of polygons. This is a very simple case of the sort of generalization which is thus possible. One has in fact an unending recurrence in the method by which he passes from objects of thought to new objects. Nor is this all. The formative elements in the system of postulates enable us also to invent new relations by means of the undefined relations which appear in the system; and these can also be extended indefinitely by means of a method of recurrence. The new relations and the new objects may be brought into connection with each other so that one may determine relations among the new objects themselves.

By this extension of the field of objects and the field of relations the base of the mathematical science is greatly enlarged and the whole doctrine obtains a new lease of life. Its development proceeds apace. When the theorems concerning these new objects and new relations become comprehensive in their reach and the science begins to have some appearance of completeness so far as these are concerned, the time is ripe for the production or creation of new objects and new relations; and these are formed. This sort of thing has occurred repeatedly in the development of mathematical science. There is no reason to believe that it need ever come to an end in the case of any comprehensive system of postulates. It appears that such an exact science may look forward with confidence to an unending development. Certainly there is no indication that the utmost reach is being attained anywhere.

³ This remarkable property of comprehensive systems of postulates has been treated with great clarity by L. Rougier in his, *La Structure des Théories Déductives*.

The new objects and relations thus brought into existence in the development of an exact science are just as novel and just as significant (though in a very different way) as are the compounds which the chemist produces from the elements or from simpler compounds. The combinations which are considered are often much more than a mere sum of their parts. Something of the creative power of the mind has been put into them in their formation.

We have said that the development of the abstract science leads to the discovery of new interpretations of it. The matter does not rest there. These new interpretations suggest new theorems; for it often happens that a certain relation obviously exists among the concrete objects whereas the corresponding abstract relation may be quite elusive. The concrete interpretation suggests the abstract theorem and the latter is then established by abstract reasoning. This interplay of the concrete and the abstract becomes of great value in the development of the abstract sciences.

So far we have had before us certain examples of exact thought and have analyzed certain general properties of it without having in mind an explicit definition of it. This we have done deliberately. Before proceeding further, however, it is convenient to state explicitly what we mean by exact thought. By exact thought we mean that sort of thought which is involved in the construction of a doctrinal function. To give meaning to our definition, we shall have to make clear what is meant by a doctrinal function. The idea, which has been in existence for some time, came to crystal clearness when the term to denote it was introduced a short while ago by Professor Keyser in his "Mathematical Philosophy."

A doctrinal function is sufficiently different from other forms of thought that one cannot expect to define it in any

other way than by pointing to examples of it and saying, Here is what I mean by doctrinal function. But one can hardly have a just conception of the meaning of exact thought without conceiving that notion clearly. Let us refer again to the miniature abstract mathematical science treated at the beginning of this article. That science consists of a number of propositions and the demonstration of some of them by means of the others. These propositions, in their abstract form, are the propositions of a doctrinal function. They are a set of propositions all of which are true for any set of objects for which the postulates are true. This doctrinal function consists of a set of postulates and their necessary logical consequences.

Such is the character of every doctrinal function. Another simple example was given in my former article (already cited). An important and much more comprehensive example is afforded by the Hilbert postulates already mentioned. They are discussed in detail by Keyser from the point of view of the doctrinal function defined by them.

If we should undertake a partial definition of a doctrinal function, we should say that it is a body of propositions made up of a consistent set of postulates and the consequences which flow from those postulates by such processes as compel assent to the conclusions reached. It is to be understood that the postulates are abstract in the sense that they refer to undefined terms and relations and hence that all the propositions in the doctrine are abstract in the sense that these undefined terms and relations remain undefined throughout the whole doctrine. Probably the reader can come to a clear conception of "doctrinal function" in no other way than by becoming acquainted with some examples of doctrinal functions by means of a careful devel-

opment of a body of theorems resulting from some given set of postulates.

If he wants to penetrate rather deeply into the meaning and implications of the notion, he should go even further than this. He should carry the matter far enough to set up for himself a rather simple system of postulates formulated with reference to a given concrete set of related objects, developing the abstract theorems of the resulting miniature mathematical science sufficiently far to enable him to find a new concrete interpretation, that is, one different from that by means of which he constructed his system of postulates in the first place. It may be necessary for him to construct several systems before he can find one capable of a satisfying multiple interpretation. But he can hardly suppose that he understands the meaning of the notion of doctrinal function until he is able to do this. And surely he cannot well understand the structure of exact thought until he can make for himself a miniature example of a body of exact thought.

One will naturally raise the question as to whether the exercise is worth while. That it is intimately related to mathematics, one of the most extensive and long-pursued enterprises of the human spirit, will probably raise in most minds a presumption in favor of its importance. When we see later in this article its intimate connection both with philosophy and with physical science, that presumption will probably give way to conviction. But there is a much nearer reason why the exercise should be of interest to one who is concerned with intellectual matters and the nature of our common human spirit. Here is a process of thinking which has been accounted valid, apparently, by every person who has ever examined it. It has existed (in less explicit form) for millenniums. Its character has never been adequately analyzed from the point of view of the

psychology of thinking. No one has ever successfully brought out of it the lessons implicit in it concerning the invariant elements in our common humanity. To be sure, the problem is far removed from the market-place. But it is intimately connected with that which most characterizes man as man, namely, the power to think consistently. Surely, this way of thinking is one with which every intelligent person should wish to be acquainted.

Let us see further in what sense we may call that thinking exact by means of which a doctrinal function is obtained. We shall have to consider the matter of setting up a system of postulates which is consistent in the sense that no consequences of them can ever be contradictory. We require some direct means of seeing that they are consistent. But first of all we shall have to have the system constructed. How shall this be accomplished? It can hardly be done in any significant case by setting up the postulates at random. One must fix upon some set of objects and form the system of postulates by reference to these. Even then the labor will require much care, as a little experimenting will show.

If the postulates are constructed in this way by the aid of a set of objects and if one makes sure that every proposition in the set of postulates is true for that set of objects he may be sure that the system is consistent. One can give no formal proof of this conclusion. But, if thinking is possible at all, we must agree that propositions are consistent if they are all true of a given set of existent things. Again, if the postulates have been formed by one person and another is asked to examine them for consistency, he can proceed only in the following way: If the postulates are inconsistent he may perhaps establish that fact by drawing from them contradictory conclusions; but if they are consistent he can prove this only by exhibiting a set

of objects and by seeing directly that each proposition is true of the set of objects constructed or otherwise set forth.

Let us suppose now that a thinker is in possession of a consistent set of postulates and let us enquire as to the character of the processes of thought by means of which he may develop them into a more or less complete doctrinal function. By exact thinking we shall here mean that sort of process by which one obtains from the given postulates and from no other hypotheses some or all of the consequences which flow from those postulates by logical necessity. It is not easy to describe the nature of this logical necessity. The term is appropriate in view of the fact that all competent persons who examine an argument of the sort in question are convinced of the validity of the conclusion reached. There is a sort of necessity either in the nature of the connections of the propositions themselves or in a common bias of the human intellect which carries the thinker forward to the conclusion with conviction. In the presence of the argument one cannot refuse to assent to the cogency of the reasoning. Whatever diversities exist in human thought there is agreement as to the logical necessity of the steps in a rigorous argument. Whatever thinking has this quality of universal necessity so far as the human mind is concerned may be called exact thinking. It is intended that the term shall cover all that kind of thinking which leads necessarily from true propositions to true propositions as well as that kind which proceeds from abstract postulates. The two are in reality aspects of one sort of thinking; and this is characterized by a universal agreement as to its validity.

In speaking of the structure of exact thought we do not mean to imply anything spatial with reference to thought. In fact, the category of space does not apply to thought. The analogy with the structure of things in space is very

gross and is apt to become misleading. To compare it with the structure of mind is perhaps more helpful; but there is perhaps danger in this also. By the structure of thought we mean the totality of connections of its parts and the relations which hold these parts together in the unity of the whole thought. One can perhaps best come to a clear conception of the meaning of the term by observing (as he may objectively) the structure of a doctrinal function—as nearly a product of pure thought as anything we have—and examining the way in which its parts hang together and the character of the connections inherent in it.

In analyzing the character and structure of this exact thinking it is important to avoid the influence of pre-formed judgments. The traditional logic does not afford an adequate view of this exact thinking as a whole. Its structure is far more intricate than the traditional logic presupposes. If an analysis could be made today of the processes of exact thought, free from the influence of the traditional logic, that analysis would deal with the syllogism not as the central elementary process in exact reasoning, but rather as one only—and that not the most important—of the methods by which the mind moves securely from propositions to propositions. The construction of new objects and new relations by means of certain formative principles contained in the postulates occupies a place of more vital importance than the syllogism itself. It is that which gives to a doctrinal function its greatest significance. On account of the unbounded method of recurrence involved in this the doctrinal function in comprehensive cases seems to be capable of an unlimited development. A similar recurrence will also frequently be involved in proof by complete induction.

The thought-processes involved in exact thinking, and in particular in the construction of doctrinal functions,

have never been subjected to an adequate analysis. The problem is certainly a difficult one, especially if the attempt is made to treat the whole of it at once. It is desirable to have some means of breaking the problem into parts so that detailed information concerning the parts may be procured without the embarrassment due to the presence of the entire problem in its great complexity. It is not easy to find a point of view from which to see the subject in parts of such sort that the analysis of one part can be carried even to a tentative stage of completeness without necessarily bringing in other matters not belonging directly to that part. The existence of the miniature mathematical sciences, of which we have already spoken, suggests a feasible point of departure. There is a certain roundedness and completeness in the development of one of these miniature doctrinal functions, small as it is. One may have considerable confidence that there is the same self-sufficiency in the logical processes involved in the construction of such a doctrinal function. If one proceeds to a study of the logical processes involved in one of these he can have a reasonable confidence in the possibility of pursuing the inquiry to a considerable length without having to bring into account other processes than those which are involved in this miniature discipline. The detailed treatment of this problem in several cases seems to me to be highly desirable; it is certainly accessible to us in the present state of knowledge. But we cannot now pursue the subject further.

Let us turn to another aspect of the structure of exact thought as revealed in the development of a doctrinal function. We have already referred to it briefly. We have seen that, when the investigator finds a new interpretation of a given doctrinal function, he knows at once without further analysis that all the theorems in the doctrinal function are true in the case of this interpretation even though the inter-

pretation was not discovered until after the theorems were proved. This is a matter of great significance. It is borne out by all relevant experience. But our confidence in the truth of the fact is not due to the experimental verification of new interpretations. Even before they are formed we know that, if they are formed, all the theorems of the doctrinal function will be true in the new interpretations. What is it in the nature of a doctrinal function which justifies this confidence in the validity of its propositions for every interpretation which verifies the postulates? As we saw at the beginning of the article, a doctrinal function may be developed from its postulates by one who initially knows no concrete interpretation. This makes abundantly clear the fact that the argument proceeds without reference to any interpretation whatever. In fact, it must do so if we are to apply it confidently to a new interpretation of its system of postulates. The argument is carried out without any reference to the meaning of the undefined terms and relations other than what is implicit in the system of postulates. The validity of the doctrinal function is one of form and not one of matter. When a doctrine is derived from the doctrinal function by assigning to its undefined terms and relations certain appropriate concrete meanings, then the validity of this doctrine is one of matter as well as one of form. But the validity of the doctrinal function itself is purely one of form. This fundamental fact is duly stressed by Keyser and by Rougier in the books already cited.

Language is necessary for the transmission of exact thought from one person to another; but the transmission requires also the active participation of the recipient, and this latter in a degree perhaps more marked than in most cases, especially if this exact thought is in the nature of a doctrinal function. A doctrinal function does not live in

the words which convey it from one to another; it lives only in the active thought of a mind which conceives it. The words convey a suggestion of the idea but no more than a suggestion. Language is not sufficient to translate the psychological reality in the conception and to convey it in its fullness. In the reduction to words the life of the thought disappears. What is said can at best serve as the starting-point from which one may proceed to reconstruct the thought in his own mind; and this thought is alive only when it is conceived by the thinker. Notwithstanding this general imperfection of language there is one perfection to which it must attain if it is properly to convey the conception of a doctrinal function. It is necessary to get away from metaphor. This is difficult, but it is essential. If a word is to carry a concrete meaning it must carry it definitely and specifically. There must be no doubt as to the exact import which every word has. To be sure, there are undefined terms; but these must be recognized as undefined. The statements made concerning them must be free of all metaphor or other ambiguity. The language must have such unity of meaning that one can never make the error of conceiving it at one time in one sense and at another time in another sense. This is the way to error and inexactness and the route must be avoided. The language is secondary to the doctrinal function as primary; but it is nevertheless of essential importance and must be handled with supreme care.

In confining our attention at present to exact thought there is no desire to disparage other sorts of thought than the exact. There is exact thought which is important and there is that which is unimportant. The same distinction is to be made in the case of inexact thought. Indeed, there are many statements which are equally true of both sorts.

Much of what we have just said about language is also applicable in the case of inexact thought; but it is perhaps of not so great importance in this case as in that to which we have applied it. To say that thought is inexact is not to say that it is careless. There exist extensive and carefully developed bodies of inexact thought which come close to some of the profounder meanings of life. There are some things so intimate to our nature that we have not yet been able to analyze them to their elements and are therefore not able to put our thought about them into exact form. These things are sometimes quite as essential to our life and happiness as the air in which we live. The logical connection and dependency which are necessary to exact thought may be absent from a body of thought without decreasing its value.

Some thought is so unsystematic and so unmethodical that it can hardly be said to have any structure at all. The thought in literature and music and various other forms of art is often so unsystematic as to be well-nigh structureless. One principal function of art is to "represent at a glance the whole of its object, and thus produce at once a total effect on the mind of the beholder"; but it is not able to do this by means of exact thought. Indeed, the logical connections of the thought involved are often so slight, at least so far as they appear explicitly, that one may almost lose sight of them altogether. The thought may be difficult and careful and valuable and indeed highly important; but the notion of exactness does not apply to it.

In this inexactness there is a certain implication of formlessness in the thought as such. This does not imply any lack of structure in the forms by which the thought is conveyed. It is necessary to distinguish carefully between the thought and the mould in which it is cast. The thought in

art is embodied in forms which are sometimes of elaborate construction, as in the case of some poems, or certain sculpture or architecture; but the thought itself can hardly be said to have a structure at all. It is presented as a unity and not as a whole made up of parts. Analysis may indeed reveal parts. But the intention and character of the work are those belonging to a unit and not to a complex. The thought is set forth by means of conventional forms, perhaps, but it does not itself partake of those forms.

At the opposite extreme from this almost structureless thought, and yet having important elements in common with it, as that of permanence, for instance, is the thought in a postulational treatment of a topic in mathematics with such definiteness of structure so intimate to its character that in it the form of the thought has become the matter of central importance. The character of this structure we have already seen somewhat in detail. Ranging from it towards the thought of art we pass through a considerable domain of exact thought with a definite or fairly definite structure, the quality of exactness being approximated in much of that thought which is not strictly of an exact form. This is particularly true of the thought in theoretical physics.

Whenever a body of thought becomes exact it has a tendency to gravitate into the mathematical field. In fact, wherever such thought appears it has the essential quality of a mathematical discipline; and it has been customary to attach it to the domain of mathematics. Perhaps one would best put the matter in this way: Whenever any particular chapter of thought, whether in physical science or elsewhere, has been reduced to an exact form, the mathematician may seize upon it and by the help which it affords him proceed to the construction of a doctrinal function to which

this exact thought shall belong. Thus the appearance of exact thought anywhere makes possible an addition to the existent body of mathematics unless indeed it is true that the corresponding doctrinal function already existed in mathematics. Thus the science of mathematics is repeatedly enriched by these accretions from exact thought wherever it arises. How mathematics in turn repays this debt to science will be seen in part as we proceed.

Since the typical form of exact thought is that of a doctrinal function developed from a system of postulates let us enquire as to what suggestions are afforded to other sciences by the structure of doctrinal functions. The two things which first attract our attention are the undefined terms and relations and the unproved propositions which go to make up the system of postulates. To make the discussion concrete let us consider this matter in relation to the systematic development of economics as a well-reasoned theory. At the very outset one is confronted with the fundamental notion of value and one soon comes to see that the notion is not susceptible of a complete objective and quantitative definition. One is compelled to work with the notion by means of certain characteristic properties which are insufficient to define it as a definitely measurable entity. In the presence of this situation what is the suggestion afforded by the structure of a doctrinal function? Precisely this, that a complete definition is unnecessary. The notion of value may appear in the theory attached to an undefined term. What one requires concerning it is not a definition but a number of primitive propositions which imply certain characteristics of the notion of value. These are directly available. In fact, they are afforded at once by certain empirical laws concerning value. The fact that a doctrinal function can be completely developed and ex-

pressed while some of the fundamental notions are undefined thus shows the way in which one may proceed.

Nor is this all. The original propositions need not necessarily be proved. What one will do in the first instance, perhaps, will be to employ empirical laws as the primitive propositions. But as the science develops one will find still simpler propositions which underlie the empirical laws and imply them. These may well be taken as the primitive propositions in the set of postulates underlying the doctrinal function of which the science of economics is one concrete interpretation. In this way the known structure of doctrinal functions may afford the requisite guidance toward a comprehensive theory. The value of effort in this direction has already been made evident by Rueff in his *Des Sciences physiques aux Sciences morales*; his discussion of the matter is very illuminating.

What is insisted upon here in the case of economics is typical of what may be done in the case of many other disciplines. That it is in fact unconsciously done in effect in the development of many disciplines I have shown in the article already cited; and I have there given reasons why it seems to me desirable to have the process employed more frequently, more consciously and more systematically. All sciences which aspire to be exact in effect should seek also to attain exactness of form from the point of view of the logical connection of parts in the exposition of them.

What reason have we to believe that there is a consonance between the logical connections of exact thought and the relations of phenomena in the natural world of experience? The question is difficult. The mind has ways of its own to get about among its thoughts and to infer a judgment from other judgments. Phenomena have connections of their own, and the relations among these are those

which are due to the properties of the substances with respect to which the phenomena occur. What ground have we to believe that these things of nature are subject to the laws of exact thought and to the ideal of rigorous thinking? We can hardly expect to settle the question by an immediate insight. Even if one should conclude it in this way his decision would be individual and personal. It would still be necessary to find means to satisfy other persons. Can we in any way subject the matter to experimental determination?

We have always gone on the assumption that whatever is necessary in thought is also necessary in nature, at least when the necessity in thought is of the sort indicated by the following case: Let us suppose that certain propositions are true of the concrete things of experience and let us suppose that we also know a certain logical consequence of these propositions, a new proposition which follows from them by the strict necessity of logical deduction. We have always supposed that the new proposition is true as a matter of fact of the concrete things to which the original propositions referred. We cannot maintain that we have always found these consequential propositions true whenever we have derived them from accepted propositions; but we can say that in all cases in which we have found them false we have also found something wrong with the original propositions which we had tentatively accepted. In fact, our experience has been so clear and so uniform in this respect that it never occurs to us to doubt the validity of our logical processes when we find them carried out satisfactorily. What we always do is to look to the original propositions to see which of them needs modification. This has indeed become one of the accepted methods of scientific advance.

When we look at our experience in thinking about the external world we see no reason to doubt the consonance of phenomena with exact thought in the sense indicated. But we cannot say that we have found a crucial experiment by means of which to put the matter to a decisive test. The conviction remains with us more as an article of scientific faith than as a conclusion which has been directly demonstrated. The question persists, and it cannot be dismissed by the assertion that it is a fictitious question, that we have separated and opposed things which are conjoined in experience. It is admitted that thought proceeds in the presence of phenomena and that the phenomena contemplated are always those which are present to thought. But it remains true that the laws of thought and the connections of phenomena are at least sufficiently separated to give rise to a real question as to their relations to one another.

It is hardly a satisfactory solution of the problem to say that thinking is impossible unless there is this solidarity between thought and nature. In the first place it is difficult to prove that thinking can proceed satisfactorily on no other basis. Even if we admitted this plausible proposition we would still be left with the question as to whether consistent thinking is possible as a matter of fact. It is true that the existence of a comprehensive and apparently consistent doctrine, such as several of those in mathematics and physics, raises the presumption that consistent thinking is possible. But it hardly settles the question so decisively as to remove it entirely from the realm of faith. We are still left face to face with the question as to whether there is a real consonance between the laws of thought and the connections of phenomena; and our conviction that there is still partakes largely of the nature of faith.

Is it possible ever to remove it from this condition? Or is it desirable to do so? We cannot give conclusive answers to these questions. But it may be desirable to point out one way in which the study of postulate systems makes some approach toward an experimental handling of the problem. Our fundamental test for establishing the consistency of a set of postulates is to exhibit certain objects of such sort that every proposition in the set of postulates is true when taken with reference to this set of objects. Now if the postulates are true in this sense and we should yet be able to derive contradictory propositions from them by means of logical processes alone we should have to conclude that the properties of the set of verifying objects were mutually contradictory from the point of view of thinking. This would lead to the conclusion that there is a lack of consonance between the connections of thought and those of things. But, as a matter of fact, no such thing has happened in our experience. Its absence argues somewhat in favor of the postulated consonance of thought and things. It comes closer than anything else we know to an experimental confirmation of this deep-lying conviction.

There is a certain important element in the structure of exact thought which is intimately connected with its relations to the development of natural science; of this we shall now speak briefly. There are two distinct classes of propositions in a doctrinal function: those which make up the postulates; and those which make up the consequences of the postulates. When the doctrinal function is given, this separation of the propositions into two classes is not unique. There are numerous ways in which the postulates may be chosen so that the totality of propositions in the doctrinal function shall be unchanged. This matter I analyzed in detail in the paper already cited. It is now to be remarked

that the application of this fact to physical science brings out the possibility of a great freedom of choice in the basic propositions of a given science. It is desirable to have the basic propositions verified experimentally, either by direct or by indirect means. This freedom in the choice of basic postulates may be exercised in such a way as to make it possible to have the fundamental propositions more directly amenable to experimental verification. One can either reform the corresponding doctrinal function with reference to this ideal, or one may leave the doctrinal function unaltered and submit it to verification by means of certain of the equivalent systems of postulates.

How this advantage may be realized in detail was shown in the case of the restricted theory of relativity in my *Theory of Relativity* (Wiley & Sons, first edition, 1913, second edition, 1920). The matter is presented in such a way that the general situation is readily seen in the special case there in consideration; the reader may be referred to that exposition for the detailed facts.

Whatever pertains immediately to the structure of thought has far-reaching connections in many directions; and this is particularly true of the structure of exact thought. We have just treated its connections with physical science; let us turn next to some of its connections with philosophy. These one can best introduce by a quotation from A. E. Taylor's article on Philosophy in volume 32 of the Twelfth Edition of *The Encyclopaedia Britannica* (1922): "For the present, physics seemed likely to occupy the same sort of central position in philosophical speculation which mathematics had held since 1900." Here we have reference to two important facts which we are now to analyze with respect to the significance of the structure of exact thought. One is this: For the first two decades of the present century mathematics held a sort of central

place in philosophical speculation. The second is this: As we enter upon the third decade of the century it begins to appear that physics is coming into the central position in philosophical speculation held by mathematics for the preceding two decades. Let us analyze these facts with reference to the problem which we are now treating.

In what way did mathematics enter into the center of philosophical speculation? The answer to this question lies in part in the self-criticism to which mathematics has subjected its processes of thought in the two preceding generations. An analysis of the meaning and significance of its processes and of the structure of the thought which produced it had become imperative. Even though this task was largely philosophical in its nature it seemed to lay so far outside of the current work of philosophers as to remain undone unless the mathematicians set themselves to this work. Accordingly, there arose an increase of philosophical interest on the part of mathematicians and they began to study the foundations of their science in a broader way than any in which they had been conceived before. The new orientation of interest brought forth unexpected fruit both for mathematics and for philosophy.

Perhaps this remarkable fruitage may be thought of as consisting principally of two parts. One of these had to do with the conception and theory of infinity and the related matters associated with sets of points. Extensive as was the influence of the ideas arising here, they had probably a less comprehensive reach and were of less importance than certain ideas which moved altogether in another direction. Moreover, the theory of infinity as such is relatively unimportant for our present enterprise. Accordingly, we shall turn from this to the other (and more embracing) stream of influence, namely, that connected with the postulational formulation of mathematical disciplines.

In the present article and in the previous one (already cited) we have seen something of the comprehensive character of the influence of these researches. It is these considerations concerning foundations which have most affected the trend of philosophical thought. They have given us a new conception of the nature of the significance which attaches to a mathematical doctrine. They have led us to a clear notion of the doctrinal function, the highest and most pleasing conception connected with the nature of pure thought.

This element in the influence of mathematics upon the character of philosophical speculation has been intimately associated with its structure as exact thought. It has given us a clearer ideal of the nature of pure thinking. It has afforded a norm for self-criticism on the part of any intellectual discipline. It has shown clearly the creative character of exact thinking, that character in virtue of which it can grow and expand apparently without limit, remaining all the while interesting and significant. It has given the human intellect new ground for believing in its power of consistent thinking. This exact thought, by the very nature of its being, exhibits the inadequacy of every mechanistic explanation of the intellectual life of man. The creative element manifested in the construction of a comprehensive doctrinal function cannot be accounted for on any mechanistic basis. The categories of matter and motion are evidently insufficient to deal with this sort of thought. This fact has not been sufficiently analyzed nor have its corollaries been pressed home to the extent and with the vigor which is so much to be desired.

There has been a tendency on the part of this exact thought itself to creep into the domain of philosophy and to live there in a novel environment. We have been hearing something of late of the scientific method in philosophy.

Emphasis has been put upon "the substitution of piecemeal, detailed, and verifiable results for large untested generalities recommended only by a certain appeal to imagination" and this "has gradually crept into philosophy through the critical scrutiny of mathematics." When we pass to these interactions between exact thought and philosophy we are on debatable ground. It is uncertain what is the value of the contributions made in this way. A philosophy inspired by such an ideal is certainly far removed from a "concrete" philosophy in the sense of Croce. But when we remain close to the self-analysis which the character of a doctrinal function forces upon every body of thought and when we criticize all thought in the light of the ideal afforded by a consideration of doctrinal functions we are in the presence of a profound influence upon all the processes of careful thinking.

If now we turn to physics and inquire in what way it is influencing current philosophical speculation we shall see that the answer is not unique. Our conception of nature and the categories in terms of which nature is to be explained are undergoing profound transformations. This is not the place to take up a general discussion of these various influences. We shall seize upon one only—the one which is perhaps the most important, certainly the one which is most clearly connected with our present enterprise. We refer to those influences which are associated with the recent theory of relativity. The most profound effects of this doctrine on philosophy are closely associated with the relativist demand for the expression of the laws of nature in covariant form. One who looks into this matter with care will see that the demand for covariance is intimately associated with a postulational treatment of phenomena and hence with a treatment of them which inclines greatly toward the ideal of exact thought.

It is not too much to say that a large part of the influence of mathematics and physics upon philosophical speculation is due to their character as exact thought or as an approximation toward exact thought.

In one respect there is a marked contrast between human thought on the one hand and matter and energy on the other. The quantity of each of the latter two—or at least the combined quantity of the two taken together—seems to be a constant in our universe. It suffers neither increase nor decrease. But it is not so with the things of thought. Within the physical world, with its constant sum-total of matter and energy, the human mind has created a new world—a microcosm within the macrocosm. This microcosm is continually on the increase. It becomes enriched in quality and enlarged in quantity. It is this which gives its principal meaning to life and its main dignity to thought. This creation of man's is the most significant result of his energy.

It is intimately associated with that which is central to man's nature. His leading characteristic is the definite power he has of accumulating wealth, both material and intellectual and spiritual, and of transmitting it to his fellows and his children. In this respect he differs more profoundly from other living beings than in any other respect. As Count Korzybski has well said, man is a time-binder, a being who is able to gather up his experiences in time and to capitalize his past in the present and for the future. His law of progress seems to be that of the geometrical ratio. As equal intervals of time are added to his experience he seems to increase his wealth of thought in an approximately fixed ratio. If he can double his mental and spiritual wealth in a certain time, then again in the same length of time he can redouble it, and again he can double it once more in the same length of time, and so on.

But we cannot now develop the consequences of this law.

It is obvious that this law of the geometrical increase of mental and spiritual wealth has not always been realized fully in the experience of our race. There have been hindrances to prevent its full play. We shall not go into this matter now; but we shall examine briefly the progress of exact thought from the point of view of the validity of this law.

There is probably nothing else in which the creative power of the human spirit is so well manifested as in the development of a comprehensive doctrinal function. The nature of this activity we have already explained. Here the construction of the microcosm takes its most ideal form. From a small beginning the whole wealth of a comprehensive discipline is opened up to view and becomes a permanent possession of the race. Historically it has been true that the initiation of such a doctrinal function has been a rather slow process. At first the additions are by little and little. But once a considerable body has been developed it serves as a sort of fulcrum by which additional truth may be moved into view. The recent rapid development of mathematical science gives support to the law of the geometrical progression as the law of man's growth. This body of doctrine has increased at a rate which itself has an increasing rate so that the total body of it in our day has become larger than anyone two generations ago could have contemplated as possible.

The element of exactness which enters into the structure of this large body of truth gives it a permanence of a sort which cannot be attained in anything else belonging to human experience. Once a comprehensive doctrinal function has been created it endures without loss as a Form of forms into which an infinitude of concrete doctrines may be moulded. It is a lasting part of the growing microcosm.

Its structure is not subject to the destroying forces of time. It is not a plaything of circumstance. It is capable of enduring while mountains pass away. No other structure of man's making can be compared to it in beauty and permanence.

R. D. CARMICHAEL.

UNIVERSITY OF ILLINOIS.

ANALYTIC PSYCHOLOGY AND RELIGIOUS SYMBOLISM

AS CHRISTIAN dogma has become more and more attenuated, and as greater and greater emphasis has been placed upon the ethical side of religion, it is natural that the religious mind should become more and more persuaded that religion is, after all, just an ethical attitude. It is natural, but it is fatal. Religion never has in the past been capable of attenuation into the merely ethical. And it is the very essence of religion that it never can be so attenuated. It is so easy, at all events for us in the West, to take for granted that Christianity is the only real religion. And therefore when it is no longer possible for the apologist to retain the barest fragments of Christian dogma, it becomes inevitable that all of Christianity that can possibly be retained—its Ethic—is erected into a religion, substituted for religion, and invested with all the value that belongs and can only belong to religion genuinely as such and in its own right. It is long since the Western mind has felt this difficulty—felt it profoundly, and begun restlessly to cast about for some means of expressing it. But until the advent of the movement now known in ordinary language as psychoanalysis, none has succeeded in becoming fully conscious of the matter. It was of no avail to bring a merely scientific and rational criticism to bear against the religious viewpoint. Against the rationalism

of a Huxley there would always be found a Newman standing upon the ultimate fact of religion in human experience, convincing the world in spite of all the absurdity of his dogma, of that basal and elemental reality. It is true, there was also a Nietzsche arising without compromise to assert the unreality and the moral insincerity that attaches to the all-too-fond retention of Christian ethic in the present phase of the world's history. But Nietzsche was not able to go further than merely to show that unreality and that insincerity. He could point to no pathway along which reality or sincerity could conceivably be found. And as the obverse of his own uncompromising iconoclasm he rendered himself guilty to the point of self-destruction.

But through the development of the most recent school of analytic psychology a re-interpretation has been given of the great historical religions of the world of such a kind that not only does full justice to their essential values but that also sets in a new light the nature and value of religion as possible of access to every human being *even* "in these last days."

It is this retention, restitution, and revaluation of religion and all that the word implies for humanity to which I wish to call attention in this article.

One of the greatest achievements ever made in the history of Science was that of Freud's discovery of what he called "the incest wish," and the estimation of its nature and power in human psychology. Speaking from a purely scientific point of view he showed how something that he described as a desire in the developing human infant for a return to the mother's womb lives on in the child's psychology, through adolescence, into maturity and moulds the psychical history of the man perhaps until death. This he did with extraordinary psychological insight; and in so far as his discovery is made from a scientific standpoint

and through a scientific method, with a security and completeness that is beyond possibility of refutation. He showed, for example, how a great dramatic work like the *Oedipus Rex* is based upon the "incest wish" and he showed how fundamental religious myths like that of the Nicodemus episode as recorded in the gospels are but variants upon the same theme.

But in so doing he thought he had "explained away" such things as a work of art or a religious myth. He supposed that when he had shown, scientifically, the basis of the religious *motif* of rebirth, "Except a man be born again . . ." he had done everything there was to do. But had he done everything there was to do? This is precisely the question of greatest religious import for the world at the present day. When you *know* that the story of Nicodemus' coming to Jesus by night is certainly based upon a psychological characteristic universal in the life of all mankind and present and even now operative in your own psychology, do you for that reason cease to be religious? Do you for that reason cease to avail yourself of the religious value of the myth of rebirth?

This is the question asked, this is the fundamental issue raised, by Dr. Jung's *Psychological Types or the Psychology of Individuation*, the translation of which is now in the hands of the English-speaking public.

In an earlier work, *The Psychology of the Unconscious*, the same author had shown how the mythology and the theological or philosophical content of a religion are related to the primitive and universal tendencies and strivings of the developing psyche. Accepting Freud's view, that in some way a tendency towards, or a desire for, return to the womb is a universal fact of infantile psychology, he shows how the unconscious expressions of this desire or tendency assume all sorts of different forms and that these

forms as well as expressing themselves as individual phantasies, find permanent embodiment in the myths of religion or in the works of a nation's art. So far there had been no difference from Freud. And in this earlier work, *The Psychology of the Unconscious*, the author's standpoint is ostensibly one which more or less judiciously considers religion as a phenomenon to be examined rather than as an experience to be lived. His point of view is indeed not fully elucidated, and it is perhaps necessary to regard the work as a transition stage towards the more complete and explicit exposition of *Psychological Types*. In the earlier work it is not quite clear whether Dr. Jung means the term religion, with the value that it implies, to be reserved for the religions of history; or whether he would wish the term to be retained as possible of application to our own experience in the present in so far as it should be possible for us, in the fullest consciousness of the nature of the unconscious processes to avail ourselves of these very processes towards the realization of our conscious values.

From an apparently scientific standpoint and with the aloofness of one who holds himself above the events he keeps in review, Dr. Jung does not do more than speak of religion as a matter of historical fact, here, a social phenomenon, there a phenomenon of individual psychology. He speaks moreover, of religious symbolism as a thing to be escaped from, a bondage even, liberation from which might be thought the aim or ideal recommended in the book. The developing human soul must certainly produce "unconscious" phantasies. The psychical life energy of man goes on continuously transforming itself into some expression of such phantasies, typically say, the mythological content of religion. The incest wish never expressing itself nakedly, but veiling itself as Freud had supposed under all kinds of symbolism, gives us in this very symbol-

ism what history has called religion. Such modification and transformation of the incest wish were for the primitive, as well as inevitable, also necessary—not only necessary, perhaps, but also of value. On the very lowest grounds, it afforded scope for an otherwise baneful manifestation of the life energy. But the new point of view envisaged in the latter part of *The Psychology of the Unconscious* discovers in this religious symbolism another possible value—something less negative than the mere absorption or transformation of a dangerous energy. In the first place, the embodiment of individual phantasy and racial myth in works of art and ceremonies or monuments of religion has given us things “of imperishable beauty.” That of itself would be a value and not a mere safeguard, not just a mere “sublimation” of destructive force. But in addition the more novel idea is given in outline that the lines of action leading to another stage of social or individual development were indicated by these religious phantasies. The satisfaction of an incest wish would have been merely destructive. As such indeed, the bare wish never did operate. But as transformed through religious symbolism it gives us, at all events, the beauty of such things as the image of the Mother and Child expressed in Medieval art. But that is not all, nor, in the last resort, may it be anything like the most important transformation. The great question at issue must finally be: does not the incest wish through its transformation in the symbolism of religion operate, as well as towards individual development, also towards social development?

But of course, so far as the primitive religious symbolism is concerned, it would operate consciously—without, that is to say, the understanding of the process through which it acted; and perhaps in a sense without the coöperation of the conscious standpoint of the individual or of the

primitive society. But if, or in so far as, it did operate towards such a result, religion, in the past at all events, had its own value.

That unconscious following of the symbolizing instinct must, however, be incompatible with our modern scientific standpoint. We *know* now, Dr. Jung implies, the inner mode of working of the unconscious; and we cannot therefore allow ourselves any longer blindly to follow the lead of the symbolizing instinct. On the other hand, we know that the developing psychical life of man *will* always go on producing phantasies. What we can do therefore, is consciously to recognize this, and to avail ourselves of the fact if we may. In the past, it had been simply religion which had enabled men to use their phantasy life "as a bridge" to all the greatest achievements. In religion they did this without knowing what they were doing and their success was independent of any conscious intention. We, in our full consciousness of the nature of our imagination, have lost both the power and the right thus to follow the merely instinctive and unknowing path to achievement. For us now at the present day it is only through conscious recognition and understanding that it is possible to take possession of our own psychical energy and use it for life. Would the author of *The Psychology of the Unconscious* at this stage in his thinking have called such a standpoint the religious one? This is a matter perhaps not quite clearly articulated in the earlier work. For he seems to speak as if we could take possession of the psychical energy "bound up in incest" with the implication "that we no longer need the stage of religious symbolism for this end." "This," he says, "would be the course of moral autonomy, of perfect freedom, when man could without compulsion wish that which he must do and this from knowledge without delusion through belief in the religious symbols."¹ It is clear indeed

that we must have liberation from belief in the religious symbols of the past; but it does not clearly appear in what way that idea is to be made actual of entering into possession of our own psychical energy through the conscious understanding of its unconscious workings. It is here, in fact, only an idea, and its elaboration and application to life remains as the task to be worked out in *Psychological Types*.

The great achievement which initiated the present movement of analytical psychology had been, as already indicated, to show the vital and momentous relation in which the whole imaginative life of man stands to the phase of psychical life belonging to infancy. The simplest way in which to illustrate this is undoubtedly through the psychological *motif* of Rebirth. In every individual and in the history of every race there is abundance of psychological material to show that the instinctive movement back to the mother's womb appears again and again clothed with all sorts of different imagery, but containing fundamentally the same *motif*. Freud had quite definitely explained the variety of forms taken on by this imagery just as different ways of veiling or concealing the incest wish in itself unacceptable to the conscious standpoint. This view was elaborated through a rigid adherence to the causal or mechanistic presuppositions of modern science. The infantile wish was operative and it produced this and this and this phantasy in succession, each psychical event being causally determined by preceding events—and so on throughout the developing psychical life of the human subject. This hypothesis was perhaps not immediately incompatible with the fact that the imaginative and phantastic life of each individual is, in fact, individual, and individually different from all other cases, though manifesting the same funda-

¹ *Psychology of the Unconscious*, English translation, p. 262.

mental motivation. But the hypothesis certainly did not explain why the incest wish should symbolize itself individually in individual cases. It certainly did not explain the apparent creativeness of the imagination. And the attempt to make it do this in Freud's application of his principle to the artistic work of Leonardo da Vinci shows a blindness as to the real nature of the experience with which he is dealing that is surely unsurpassed by any other writer who ever touched on the subject of art.

Psychology may no doubt be pursued along the lines given in the presupposition of causal determination. Physical science is so pursued with marked success. But even physical investigations lead eventually to a scrutiny of the idea of causal determination. This scrutiny, of course, may be held to fall within the domain of Metaphysic and not of Physics, but in the last resort the name does not matter. The scrutiny must be made somehow or somewhere. Just so psychology, initiated as a science through the acceptance of the mechanistic view of mental phenomena will lead to a demand for the same scrutiny. But its difference from Physics is that the demand will be made at a very much earlier stage. Problems of the self, of its unity, of its freedom or unfreedom arise almost from the beginning. In especial the constant occurrence of purposive action and thinking as matter for psychological investigation necessitates a more or less immediate relating of Psychology to teleological conceptions and hypotheses. Even in biological science, whatever the ultimate metaphysical hope of the investigator, he is bound to incorporate a whole system of *de facto* teleological occurrences within his science — *de facto* in the sense that they can only at present be systematized *as if* purpose were operative. Much more, then, in Psychology must the teleological point of view be discussed, not necessarily as an ultimate metaphysical one, but as one

that has certainly this *de facto* application without which the science cannot proceed.

Now in human psychology a purpose may be explicit or may operate as an idea of full consciousness. In organic nature, as for instance in the suitability of the pistil to the pollen grain, the purpose need not, so far as we know, occur in any mind. All we are entitled to say is that the flower is fertilized *as if* its structure had been planned on purpose. Yet this much we must say in the present state of our knowledge. But there is a middle region between the phenomena of mind as accessible to our ordinary introspection and the phenomena of vegetative nature. There are the processes of mind less accessible to introspection, or perhaps quite inaccessible to it, familiarly, if with doubtful accuracy, called unconscious—processes like dream, phantasy and imagination—or even perhaps the processes that lie beneath these. Here also, we have to ask, do we not need to assert the occurrence or operation of the teleological in the sense above defined?

Now the imagery of a dream has certainly traceable causal connections with preceding psychological or physiological states—traceable, too, to infancy and to the original sources of the movement back to the mother's womb. But equally and with as good a right, the teleological side of the matter demands attention along with the causal. Now if there be a teleological view of phantasy formation it will exhibit the conception of symbol in a new and totally different light from that in which it was originally viewed by Freud.

The Freudian Psychology had made good that the images of dreams and of the various forms of the phantasy life of man are in some sense symbolic. But since his standpoint is strictly causal and deterministic, the meaning attributable to the term symbol is thereby rigorously defined

within somewhat narrow limits. The symbolic image, whatever it is, must appear as the effect of a psychological or physiological cause. It does no doubt "symbolize" or represent some fact other than itself. The Sphinx, for example, in the Oedipus legend represents the mother together with fear of incest or the incest barrier. It does so only because the conscious standpoint would reject the original figure of the Mother in such a context. The wish being frustrated by conventional attitudes, by social morality, and by the whole system of deeply ingrained modes of thought and feeling, finds an outlet in the phantasy formation of the Sphinx and all the imagery that accompanies it. The most that the unravelling of the tangle of "symbolic" imagery can do, the most that the interpretation of dream or phantasy can accomplish, is to lead back to very early stages in the psychology of the infant, in particular to the time when the event of birth left its ineradicable traces on the infant soul.

The fundamental divergence of Dr. Jung from this view of phantasy formation begins in his insistence on a teleological standpoint as well as a causal. If this be introduced it means that the phantasies produced in the developing mind or soul of the individual or the images embodied in the art and religion of the nation do not merely result from original and universal psychological occurrences centering around birth. They are no doubt in a sense the results of such occurrences; but they are not fully comprehensible as results and nothing more. The adaptation of an organism is certainly the result of previous phases of organic life; but adaptation is not intelligible merely as part of a causal sequence. Just so, the adaptation of the developing human organism is dependent upon the phantasies produced in its psychology, but this adaptation is not explicable merely as a result causally effected.

Biological science cannot proceed without teleological categories. Neither can Psychology.

The phantasy formation, therefore, of developing individual or developing race cannot be regarded as entirely, and in the completest sense, purposeless. It will begin to be apparent how this radically changes the meaning to be attached to the term *symbol*.

Once more it will be simpler to bring out the significance which Dr. Jung attaches to the idea of symbol through the psychological *motif* of rebirth. To begin with, the mere fact that it is Rebirth, that it is not merely the entrance into the womb, but the issuing forth again from the womb, distinguishes it from the incest wish in any possible form. If the desire, or whatever it is to be called, is directed toward rebirth and is not merely a regressive movement towards the mother, then it is a movement towards a new life, and not a pathological phantasy formation that escapes life or appears as the negation of life. Further, it must be through the following out of the *motif* that any real development can be secured. On the plane of the historical religions it has been given as a condition of entering into the new spiritual kingdom that the man should first be born again. And the objection pressed by Nicodemus, how can a man enter into his mother's womb after he is old? is the resistance that from the rational standpoint of consciousness will always be held out against the fundamental demands of religion. But at no stage in the history of the human soul can violence be done to the basal structure along the lines of which alone development can take place. There can be no hiatus, and there can be no sudden change. It is not possible that at any time the psychological growth can omit the essential stages. In so far as the incest wish does operate, the individual psyche must, in a sense regress towards the womb. It cannot come directly into life. But

the manner of its regression will determine whether the regression be merely the backward movement and nothing more; or whether if in association with the possibilities of rebirth, it does not end in regression but converts the whole movement into a discovery of life. If it is rebirth and not merely incest wish then it is a discovery of a new life. Rebirth is creativeness, but the creativeness comes only by following out the given pathway. It is in the first place the only possible pathway, and yet if followed out it leads to novelty—a novelty inaccessible in any other way.

It is here then that room must be found for the teleological principle. The series of images that arise through the operation of the incest tendencies must be thought as causally related to each other and to the fundamental tendency; but they cannot be completely thought in this way. Just as essential to the true thinking of the process as the causal principle there is also the teleological principle which will think the series of images as directed towards the discovery of a new possibility. In a sense, of course, one might speak simply of end and purpose. But since it is neither necessary nor desirable to regard the end or purpose as conceptually existing in any mind, it is enough, and it is far better, if room is left for novelty, if in any sense "the gates of the future" can be seen simply as standing open. This would be the creativeness of the life process, and it is creativeness in this sense, the idea of which Dr. Jung has elucidated from his analytic standpoint and upon which he insists.

If the causal view of psychological process be alone maintained, no image or phantasy that occurs is capable of symbolic interpretation except in so far as it leads back to, and may seem to set in a clearer light, events in the past. But if the teleological view be of equal importance the problem at once emerges of the significance of the image or phantasy for the present stage or for the immediate develop-

ment of the psychical life. In this significance for development lies the real value of symbolism, and it is in the significance for life as yet unlived and therefore unexplored by the intellect and inaccessible to any rational explanation that the vitality of the symbol lies. What, therefore, a symbol represents must be inexpressible in any other form. You cannot take a symbol and say in words that it represents so and so and so and so. When, for example, the Christian cross was a living symbol, it stood for something that had immediately to be lived, and yet what that something was could be given in no other way than through the symbol. "The way in which St. Paul and the early mystical speculators handle the symbol of the cross shows that for them it was a living symbol which represented the inexpressible in an *unsurpassable* way."²

The symbol whether it arise in the dream or in any other context, is always the result of psychological conflict. It is an attempt of the soul to discover a way of mediation between the opposing tendencies. The problem presented by the neurotic patient to the mental physician is therefore precisely the same as what the language of Oriental philosophy has called the pairs of opposites that are to be reconciled in Brahman. Dr. Jung has, in fact, revealed the extraordinary coincidence of Oriental religious philosophy with the results of Western scientific psychology; but while the religions of the East have successfully rivaled the science of the West in point of psychological accuracy, they have given what Western culture has not yet been able to do, at least without their help, a positive solution of the general Psychological problem presented.

The symbol then whether it arise in the dream of the neurotic subject or in the larger social phantasies of art or religion is the point of initiation of the pathway of recon-

² *Psychological Types*, English translation, p. 602.

ciliation between the pairs of opposites. But since it represents the psychical energy that is behind more than a single impulse or tendency, since it represents the psychical energy that lies behind both terms of the opposites, of the unadmitted "unconscious" tendency and of the conscious values, it therefore represents a totality of the psychical energy in a way that nothing else can do. It comes therefore with an inevitable power. That is, for example, the character of the power that is contained in the idea of God. That idea is, from the standpoint of analytical psychology, nothing more than a phantasy unconsciously produced. But since it has behind it in so far as it is a living symbol, the totality of the psychical energy, it is invested with all the power that history has shown to belong to the idea of God in so far as it has ever been a living idea of a living God.

But for historical or primitive religion the nature of the soul as thus capable of producing symbolic phantasies could not be known. That is to say, the symbol was unconsciously produced and its power was unconsciously utilized. The symbol and its utilization were of "those mysterious instinctive forces which promote the perfecting of human nature in the religious process."³ But it is a fundamental psychological law that in so far as any psychical function operates unconsciously or without full recognition by the most conscious standpoint, just in so far does it operate to project its contents upon objects and into the objectively real world. The god of the primitive man is realized or objectified as an image of stone or wood or bronze. In the same way the God of the monotheistic religions is objectified, not indeed as a tangible image, but as a God existing "in reality," that is to say, in some sense outside the soul. But if, or when, a stage or culture could be reached when men should become entirely conscious of the nature of the

³ *Psychological Types*, English translation, p. 302.

soul and of the processes through which its symbolic phantasies are produced, projection of the idea of God upon or into an outer supposed real world would cease; it would be that the real existence and power of God lies simply in His being in the soul.

The outstanding mind in the history of Western culture so to recognize the idea of God as being in the soul was that of Meister Eckehard at the close of the thirteenth and beginning of the fourteenth centuries. But until the time of the Reformation so far as social religion was concerned the idea of God remained as projected upon or into an outer existence. This objectification indeed reached its height at the Reformation. From that point onward as the conscious standpoint was able more and more to comprehend the psychological character of the psyche as a whole, the idea of God became more and more subjective.

Accepting, however, Meister Eckehard's religious genius as contributing the highest expression of the subjectivity of God, Dr. Jung examines and elucidates Eckehard's doctrine of the relativity of God through the most recent developments of analytical psychology. Since the problem of the neurotic subject is always the personal problem of conflict, the symbol produced in dream or phantasy is thus necessarily relative to that individual soul. Or more largely, since the pair of opposites that constitute the personal problem of any man is always relative to that man himself, his God will always be relative to his own soul. Philosophically, therefore, such a doctrine insists on the reality and power of God in the soul through the denial of that God as objectively real in the sense of his existence in some other outer reality—other than the soul or outside the soul.

It will be seen at once by the reader how closely allied is such a standpoint to that of Kant in so far as Kant is to be identified with his scepticism of the faculty of the intel-

lect. God whom he demands as necessary for the "respect for moral law necessarily directed towards the highest good" is, once again, only a phantasy; but the phantasy is recognized as such in so far at least, as the system of postulation is genuinely postulation. And the *Critique of Practical Reason* is spoken of as "an attempt on a large scale to make a philosophical estimate of the 'esse in anima'."⁴

One of the great interests then of Dr. Jung's psychological work is the thoroughness with which the metaphysical issue of the psychological problem is investigated. We have here another attempt to define the limitation of the intellect and at the same time to insist upon its function within its own sphere, and to discover what the true province and scope of the intellect really are. And it is here, or at least this is one of the points, where I should hope that philosophical controversy might arise in the immediate future, and so vitalize the issue of the incidence of analytic psychology on the problem of religion. And I am certain at least of this: that no writing upon that subject is of the slightest value, now, at this stage of Western culture, that does not take the fullest account of analytic psychology.

J. M. THORBURN.

UNIVERSITY COLLEGE, CARDIFF, ENGLAND.

⁴ *Psychological Types*, English translation, p. 61.

THE RIGHT AND THE GOOD IN THEORY AND PRACTICE

I N a remarkable footnote to the *Folkways*, Sumner says that inasmuch as men have not been able to secure happiness by being virtuous, the great philosophical problem of the ages has always been concerning their relationship. "It is," he observes, "only within a few generations that men have found courage to say that there is none. The whole strength of the notion that they are correlated lies in the opposite experience that no evil thing brings happiness." The truth of this statement lies in the fact that the union of virtue and happiness has been a problem of the ages. From the early Cosmologists to the present day, philosophers and laymen, in theory and practice, have woven a web of thought and established a variety of conduct around these two terms. Employing in this paper the terms right and good rather than virtue and happiness, a survey of history indicates that the central questions always asked concerning them are such as these: If I do right, shall I receive good? If I enjoy good, shall I be doing right? If they are not related, which shall I follow? Is the moral order to which they refer something over and above me and my fellows or is it created by us? Stated in more philosophic terms, the problems of the relation of the right to the good center in: (1) the objectivity of the moral order; (2) the relation of ends and means; (3) the self; and (4) the relation of moral values to the universe as a whole.

The thesis of the discussion is that an adequate understanding of this problem suggests a fruitful approach to the whole moral question.

Take the notion of *Objectivity*. Practically all philosophers have regarded the moral concepts as indicative of some kind of a moral order that must be relatively or permanently stable. Just as science assumes the uniformity of nature in its experiments and investigations, so ethics has felt that unless what we say is right and good is objective and expressive of a certain order that holds whether you or I say so or not, moral judgments are futile. The overwhelming belief in a moral order certainly indicates that there is truth in it, and an explanation and justification of it necessitates an inquiry into its historical genesis to see just what have been the problems which the various philosophers have faced. Viewed from a sociological and genetic point of view, philosophy inherited its conceptions of a moral order from religion which in turn derived them from primitive man. Abundant proof has been offered to show that in early society man comes into a world that is already morally organized. Society is the birthplace of our moral order which was first conceived in a crude trial and error fashion. This order, though social in that it represented the collective efforts of a group to preserve itself, was not regarded as *social*, because there was no differentiation between the social and the natural. The structure and behavior of the world was a part of the structure and behavior of society. Human nature and nature were literally one comprehensive moral order. The early Greek religions developed this moral order as *moira*—as, at most, a quasi-personal moral destiny which made its inexorable demands upon every individual. Right, as expressive of this destiny, was the primary conception, and every man was bound to conform to it in order to realize his good.

Thus the substance about which the early Greek thinkers were concerned was related to this moral order. Commerce, the beginnings of science, travels, and wars brought to the social consciousness the fact that the current religious *interpretations* of the moral order were wrong, but no one questioned the fact of its existence. The social situation forced a breakdown of the religious interpretation of the order but not of the order itself. Unconsciously assuming its existence, the early philosophers were intensely interested in finding out just what it was. Thus the first real conflict between man and the moral order was rather a conflict between different interpretations of a cosmic order that all assumed.

The early Greeks thus gave to philosophy a problem that it has never solved. Upon reaching the Age of Reflection man has found himself in possession of desires and wants (the good) that he cannot realize and in relation to a universe and other people that have demanded that he act in a certain way (the right). Between these two poles he has with ceaseless energy sought to construct a moral order that would give objectivity to his unrealized desires and freedom to his personality. A dichotomy of reality has been the result. Thus the Absolute idealists relegate to the realm of appearance all the seeming objectivity of nature and elevate the real moral order to the dignity of an Absolute. The truly objective moral order is the Absolute (the good as perfection or self-realization) which is reproducing itself in the world of experience as an apparent objectivity of nature (the right as commands to do). Man as a conscious being is a participant in this order and free; as a finite organism he is a part of nature and determined. Although consciousness (the good as desire is unfulfilled and exists only in idea) appears subjective and nature (the right as certain actions must be obeyed whether it seems

good or not) objective in the realm of appearance, the Absolute represents the moral order as essentially rational and good. On the other hand, the realists feel that while values may not be realized in the objective order of nature to put them in consciousness is to make them subjective. So reality is again divided into the realm of the subsistential where ends or the good subsist of their own nature and the realm of nature where means or the right exist by the laws of mechanical necessity. With the idealists man is a realizer of a moral order already determined by the Absolute; with the realists he is a discoverer of an ideal moral order that subsists by its own intrinsic nature and a seeker of means in a world ruled by mechanical law. The pragmatist insists that moral ideas arise in the environment as a result of a conflict within it. The moral order is the social structure. It is not superimposed upon the individual, nor isolated from him; but is composed of individuals. Progress is possible because man as a part of the universe can be an agency in solving some of its internal conflicts. These conflicts always take the form of conflicting desires. When desires cannot be realized in the social order from which they spring and toward which they are directed, they become subjective. They exist only in idea. But they have their source in an objective moral order and their aim is to function in that order. This statement carries the implications: (1) that moral ideas exist in order to become objective; and (2) that the objective social and moral order is such that it can be changed by ideas which arise out of it. This sort of objectivity lends itself to a functional analysis of the place of moral concepts in the social system.

While the anti-empiricists, feeling the need of complete self-realization and recognizing the patent impossibility of realizing it in experience, have put the control and content of the moral order above the reach of man, everyday moral-

ity stands in need of a functional interpretation of objectivity and necessity, subjectivity and freedom. These terms must be parts of the life-process, not logical or metaphysical forms. If experience be taken at its face value, all of them can be adequately explained.. Although it is a trite saying that man is a social animal, this fact furnishes the basis for all the objectivity and necessity that exist in the moral order. As the savage, man today also arrives in a world already morally organized. He follows the ways of his elders, he worships the accepted God, he loves the approved country, and supports the selected party. But by and by he finds himself in conflict with immediate experience. He wants to do something which the social order forbids. Out of these conflicts the reflective capacities gradually arise and a person learns to control his actions by them. Thinking enables a man to respond vicariously instead of overtly. Socially and morally it means that an individual is able to take the point of view of others and adjust his actions accordingly. Thought (and concepts) gives significance to *activity*. Its purpose is to bring an individual's overt action into a satisfactory adjustment with the objective social and moral situation. Its utility lies in the fact that it enables an individual to see the consequences of his act without actually experiencing them. Now necessity and objectivity consist in the fact that man lives in a socially organized world. They belong to the social organization itself which is a fact of immediate experience. This social structure exercises a controlling influence over the individual, whether he wills it or not.

But in a reflective experience the necessity and objectivity of the social structure are brought to consciousness and become *moral* as an individual undertakes to discover just *why* some of his ideals cannot be realized. In such cases of conflict between the individual and the social system as the

reflective person makes both of them a part of his own judgment, he must be able so to conceive his end that it will agree with the ends of others. It is in just such a situation that the functional difference between the objective and the subjective comes into play. A reflecting person finds some of his ideals and desires inhibited. He cannot realize them in fact. They exist only as ideals in his mind. They are subjective and private. On the other hand, his aim is to make them objective—to make them function in immediate experience out of which they arose. He realizes that he can do this only in so far as he can make them agree with the social structure, only in so far as he can take the attitude of other people and adjust his ends from their point of view as well as from his own. He must be able to see the implications of his act—in so far as it affects others. This latter attitude tends to make explicit and moral the objectivity and necessity that exist as a datum in immediate experience. It is *necessary* in that the good cannot be realized unless it is adapted to the social structure; it is *objective* in that when so adapted it ceases to be an ideal and exists as a fact.

However, the adjustment of an individual end to a social universal is not one of subsumption of the particular under the universal. This would be the case if we had a static society and rules of conduct to apply to all cases. But when a particular end conflicts with a social structure, a reconstruction of the whole situation is frequently necessary. The social structure represents objective conditions that have to be considered, but it does not represent a fixed universal. Such a conflict calls for reflection, discrimination, and analysis. The history of morality up to the present shows that out of these conflicts both new universals and particulars have arisen. So the essential point is that in reflective life individuals do have ends that conflict with

the social structure; that social structures exist as the necessary conditions for the realization of these ends; but that in the solution new particulars and new universals may emerge. In this respect we are really free and progressive.

Applied to the right and the good, such an interpretation of the life-process and of objectivity would regard the moral concepts as products of reflective experience. In a conflict of an individual's end with those of others he would call that good which stood for his own aspirations and right that which represented the social order. One is activity, the other structure. They are organically related: *independent* in that they point to the fact that there are two sides to a conflict; *subjective* in that so long as the conflict lasts they exist only in idea and represent a temporary checking of overt action; *objective* in that it is necessary for both sides to be adjusted before a solution is realized; and *free* in that out of the conflict new meaning may be born to them.

The right and the good need not be fixed entities in order to be objective nor moral rules final in order to be useful. In fact, moral rules are abstract structures. They describe conduct that has been adequate in the past and thus serve as guides. They say that the right and the good have functioned in such and such a way in the past. Far from being universals under which may be subsumed any new right or good that may arise, they serve as the conditions for the solution of a moral problem every one of which is unique in itself. If one finds that something he conceives as right is in conflict with what he considers good or formerly regarded as right, the old rules set a problem for him. It is this that constitute their value: they remind him that the past has experienced morality differently and probably successfully from the way he is now contemplating it. This does not necessarily mean, however, that the new end must

be brought under the old rule: it means that any end is a part of a social system; that the two must function together, and that this may involve the reconstruction of them both.

Ends and Means. Throughout the history of the world, mankind has had its attention centered on consummatory objects and the means to enjoy and preserve them. Savages and philosophers, ancients and moderns, have forever been facing the problem of attaining and holding certain value-ends. This fundamental desire for ends and the equally fundamental difficulty of securing them have woven into the history of ethics and religion the perplexing problem of the relation of means to ends. Although man has always considered the universe favorable to his ends or values, the time, degree, circumstance, and cause of this favorableness have constituted the mooted point. The seemingly ruthless character of nature, the prosperity of the wicked and the suffering of the righteous, and the apparent impossibility of forcing nature to yield to the insistent demands which man's desires forever make upon her have led many philosophers to construct a metaphysical and teleological end of the world as the only possible way to harmonize man's ideals with empirical facts. The good becomes the final end of the world and the right a means to it; both are fixed and eternal. Another typical view is that the right is a means to an individual's pleasure. Now the conviction of this discussion is that ends and means are only two ways of regarding the *same* experience.

Progress is possible only with a theory of morality that puts things within our control. Man's primary work centers around the present, and what he stands in need of is an immanent teleology which finds the distinction between ends and means as functional aspects of the experience. Experience, as here defined, involves organisms in relation to other organisms and to physical things. Man is not a

stranger among the precarious and ruthless forces of nature, but as a part of it he is dwelling in the only home that he has ever known. If, as Dr. Kallen remarks, the world is not one that was made for us but one in which we happened and grew, it is equally true that the *growing* factor is the most fundamental. If we look upon the world as one in which we grow, values and ends must be defined in terms of what they can do. The fact that we have a moral order at all testifies that we are conquering but that we have not yet conquered the universe. Experience indicates that human nature and nature are mutually dependent and that ends and means must be defined in terms of the situation in which they are found.

This interpretation implies that there is no such thing as *the end* and *the means*, but ends and means. Ends as reflective processes have to do with the formulation of people's wants and desires; means concern the realization of them. Ends are characteristic of human organisms; means of the physical environment. They are functionally interdependent. Ends become significant only when there is a possibility of their being realized and when they are formulated in terms of what they can do. What is thus conceived as an end will depend upon its compatibility with other ends and upon the means at our disposal. An end being functional to a situation, the first condition for its formulation is therefore that it be adjusted to other ends that are involved. Applied to the right and the good, this view would reject the theory that treats the right as a means to the good. Such an interpretation assumes that the good is an organic end or whole that contains in itself all that is desirable and that the problem of morality is that of means or attainment. But this is a statement rather than a solution of the problem. The *compatibility* of ends involves the biggest problem of ethics, and an analysis of moral decisions and customs

clearly shows that men have not yet been able to make their ends entirely compatible. So ends are relative to others as well as to an individual. Now if the purpose of an ethical judgment is so to compose a given end that it may be realized, it is necessary first of all to bring it in harmony with the ends of others and this involves the consideration of both the right and the good as characteristic of ends: the good as representative of the end which the individual has in view and the right as expressive of the ends of others with which it must be compatible. This adjustment constitutes the core of the moral problem, and can never occur so long as one seeks to treat others as means to his own welfare. Functional ends are, therefore, those that are adjusted to a specific situation involving a social order with an innumerable variety of purposes.

The second condition of functional ends concerns the concrete and physical means at our disposal which enable us to realize them. Internal compatibility of ends is not the sole factor of their value: for ends which work must take means into account. What shall be ends and what shall be means depend not only upon the adjustment of one end to others, but also upon our ability to control our environment. Functional ethics would employ the scientific method for the statement and realization of ends. Scientific method does not tell us what ends we shall have, but it gives the conditions for their realization. It states that all the facts must be taken into account and that everything involved must be considered. It gives no guarantee that an end will be realized, but neither does it say that things must remain as they are. It simply offers the best medium for the realization of values. Scientific method is the extraordinary agency by means of which man can most effectively control his environment and most clearly perceive his limitations. It enables a man to construct ends that will operate. Ends

and means are thus descriptions of processes that show how human organisms carry on their activity in relation to one another and to the physical world.

A functional view of ends and means can offer no final cure for all the ills of the world; at best it can only suggest a palliative. But much of the sorrow and suffering of the world can be alleviated by a removal of fixed ends that refuse to be tested by their performance, by a more adequate conception of value in terms of function, and by a closer and more efficient application of the scientific method in the use of means. Fixed ends bar the way to progress. They either divert attention to a distant goal which may lead to indifference to present affairs or else they block the realization of other ends that may conflict with them. As long as the literal interpretation of the Bible is an incommensurable value, the scientific study of the origin and development of man is impossible. As long as insanity was regarded as unclean, medical research and values arising therefrom were thwarted. A fixed end is chiefly concerned with self-protection, sets up institutions to keep it alive, and busies itself attacking other values that may threaten its existence.

The striking development of individualism and the momentous rise of industry of the past half century have given rise to two serious obstacles to empirical moral progress: (1) an individualistic, Nietzschean view of ends that treats others as means; and (2) the overwhelming attention given to means as compared to ends. The laissez-faire policy in economics and the natural rights theory in politics have centered attention on individualism. The capitalist and the laborer, the monarchist and the anarchist, have in practice treated others as means. Wars, strikes, and revolutions have been the result. The theory of Adam Smith that in promoting self-interest the interests of all are served

is at work today in the actions of the so-called self-made man. Child labor, twelve-hour days, ruthless competition, and gigantic trusts would make it appear that the self-made man seeks to treat others as means; strikes, sabotage, revolutions, and wars demonstrate that people will not permit such treatment.

Similarly, the rapid rise of industry, of tools and instruments, of commerce, of telephones and radios, of airships, and of banking and credit has focussed attention upon the extraordinary control which man can exercise upon his environment. No sooner is one part of nature brought under control than we discover that we can conquer another. In restless and uneasy activity we flit across from one thing to another, neither knowing what our ends are or taking the time to formulate them. We invent the steam engine and deliver our goods by rail; but before we have interpreted its meaning and constructed our ends accordingly, we build the airplane and deliver them by air. We pass from the plough to the tractor, from the horse to the automobile, from the telephone to the radio, from the stage to the motion picture, from the concert to the victrola, from local trade to great trusts with no corresponding formulation of ends. With our attention so deeply centered on the means, fixed and worn out means of the past continue to hold power. With the services of a multitude of sciences at our disposal and with an hitherto unheard of control over nature, the old ends and ideals of natural rights, of revealed religion, and of human depravity permit a handful of politicians to govern a nation, a few trusts to control industry, and a large part of the world to go unfed, unschooled, and unclean. With our eyes forever on the means we cannot see the significance that they might have for the establishment of new ends.

But if there is no panacea for existing ills, the alternative is not to take refuge in an Absolute in which everything will be finally righted nor to yield in despair to a merciless universe which spins things out according to its own laws. Neither man nor nature is ready-made. We live in a world over which we can have some control and which in turn exercises some control over us. If ends and means do not represent divisions of reality but processes of life and if they are defined in terms of situations, they are challenge to work. We must select ends that can be realized and devise means that will accomplish this purpose. Individuals must consider others whether they will it or not, and individualism can truly function only when an enlightened social consciousness enables everyone to treat himself and others as ends; such over-emphasis on means which our present industrial age exemplifies can only be remedied by an adequate formulation of ends that are adjusted to them. To violate the personality of others is to pay the penalty of immorality; and too much absorption with means is to suffer at the hands of natural law.

The Self. A genetic study of the moral concepts cannot regard the self as a psychic recipient of fixed values, but holds that all conduct is an interaction between elements of human nature and the environment. The self arises in experience in the capacity to reflect upon and guide overt activity. It is not an entity that is set over against nature nor is nature mechanical particles in motion that is set over against the self. A self is a reflective and acting organism in relation to an environment, affecting it and being affected by it. Tufts says that this implies a life-process with an equipment of instincts, habits, and emotions; an association with other human beings engaged in common activities; intelligence and judgment by which an individual learns to control his experience; and a changing physical

environment in organic relation to human beings. Control cannot be exercised by the pure reason or by mere emotions; but only by an individual viewed as an organic whole and as a part of a social and physical world. A self of this sort is constantly undergoing reconstruction.

Thus regarding the self as the capacity of the human organism to control its environment and its conduct toward others, functional ethics finds its essential characteristics in its reflective processes which arise out of conflicts in immediate experience and which strive to remove them. Moral conflicts are social, and involve the conduct of one person toward another. It is only in reflective life that the real moral problems arise. When some individual's wants conflict with those of others, when the given individual *recognizes* the conflict and, desiring to function in the group, seeks a solution, and when he sees that he can solve it most successfully by taking the attitude of other people in thought and by adopting an end that will satisfy both himself and others, he is dealing with a genuine moral problem. Now the profound insistence of a large body of far-seeing and intelligent thinkers upon the role of reason in matters of morals presents a serious challenge to any student who would question its potency. Reason surely has a place in the moral order. In a sense we can say with Green and Bosanquet and with Moore and Rashdall that "reason discovers" the moral concepts. For without reason there is no moral order, no good and right. Reason is significant of the capacity of human beings to bring to consciousness the necessity and objectivity that exist in the social order and to make a moral order out of them. But it is not a separate organ that discovers transcendental values, but an immanent characteristic of man that enables him to control his actions in all their implications. Morality involves the work of a growing personality, not a merely

rational or emotional being. As stated above, such a personality has desires and instincts and habits; he has intelligence and emotions; he has associations with other people; he has control of and is controlled by the physical environment. He realizes that if he is to get along in the world he must be forever reconstructing himself—using intelligence and feeling to see how his wants and ideals can be adjusted to others, how he can control his environment, and when he must submit to it.

The right and the good give significance to the self in that they represent just this constructive effort of the individual to bring his ends into harmony with those of his associates. Such an individual must be able not only to use his reason, but his will and emotions as well. To see the others' point of view he must be able to put himself *literally* in their place—must feel and think and will with them. The good is such an individual's effort to give expression to his own desires in the face of all the relevant facts; the right is his recognition of the fact that the wants and intelligence and personalities of others must be considered. Only a growing self that can create new ends is truly moral. Moral selfhood, therefore, involves the capacity to control one's actions in a social world. It does not possess complete freedom, for conflict and uncertainty are always with us; it is not a fixed self, for it must change to meet new conditions. It offers no final security against difficulties, no fixed order of good and right. But it locates the point of effective endeavor and destroys the effort to live in two unrelated worlds. It finds the right and the good in a moral order created by man in a social and physical environment, always changing.

Moral concepts and the totality of things. In all discussions concerning a moral order two points stand out prominently: (1) that man is interested in his own welfare; and

(2) that he does not act alone. The first suggests the concept good and the second right. In order to harmonize these two seemingly incompatible terms, the anti-empiricists have related the moral world of man to a universe which in its essence and entirety is good. But for a moral order to have practical meaning, its concepts cannot refer to divisions of reality. They are not metaphysical entities separate from one another; they are not divisions of reality which are ultimately and eternally separable or which require an Absolute or God to bring them together. Philosophy has been troubled over setting up *the* right and *the* good in the structure of things and then attempting to unite them. It has sought to make the reflective life cover the whole of reality. The fact that the whole of reality has frequently been interpreted in terms of value is indicative of man's attempt to cling to what he holds dearest. As long, however, as the attempt is made to take a reflective concept and spread it over all reality, just so long will the total process to which the right and good belong be impossible of definition. If the right and the good are regarded as only abstract names that stand for particular phases of the life-process and not as entities in themselves, a genetic study of morality will throw some light upon how they are related to the world as a whole. If they are conceived as functions of a judging process, their independence and union can be explained and justified. Judgments arise out of immediate experience—out of a life-process that runs of itself until conflict occur within it. The purpose of a judgment is to solve these conflicts. In immediate experience there is no distinction between the right and the good—there is no need for it. Everything goes along of itself. In conflicts that give rise to judgments right and good emerge. They represent two aspects of a moral judgment that is seeking to give meaning to a conflicting situation

so that it can be solved. When the conflict is over, the judgment has served its purpose, and the distinction between the right and the good loses itself in immediate experience out of which it arose. This statement necessarily carries the implication that the distinction between the right and good and their very meaning and use refer only to reflective experience and that it is a false inference to spread this dichotomy over the rest of the life-process.

The further implication is that since life is constantly being reconstructed all activity is potentially moral. The problem stage of experience gives independence to the right and the good and the adjustment stage or immediate experience unites them in a non-moral situation. The content of life is always passing from one to the other. *Concretely* this is the criterion which almost all the theories of ethics have employed. Green and the idealists seek as a union of the right and the good the actual realization of personalities; while G. E. Moore and the realists demand an experience with which we would be completely satisfied. This is what occurs in immediate experience: here things possess intrinsic value and our personalities realize themselves. Moral struggles, unfulfilled ideals, unsatisfied wants, and the dichotomy between the right and the good find themselves in immediate experience transformed into an on-going activity satisfied with itself. But the realist's good as isolated and the idealist's will as a unit seem to merge everything into *one cognitive whole*; whereas immediate experience does not necessarily present goods that are identical with one another or with the right nor values that are good in isolation but a complex and variegated experience that is harmonious. *The right and the good* are abstract terms. In reality there are as many rights and goods as there are moral situations. Each is unique. Whatever the meaning will be depends on the situation, not on the con-

cept. The content and significance of the terms must always emerge out of the situation in hand.

One of the reasons why philosophers have postulated a metaphysical union between the right and the good is that on earth many of their ideals cannot be satisfied. It must be again repeated that the analysis here undertaken cannot offer a remedy for this difficulty. The fundamental independence of the right and the good indicates the fact that problems are always occurring. But it is important to bear in mind that these conflicts are always particular and that they call for some sort of specific solution. They give no reference to the solution of a general good or a general righteousness. In these particular cases it may well be that a given person will not receive what he thinks to be his good or right; but it may be equally true that it is all that he can do, morally, under the circumstances. If such a situation lacks the assurance that an Absolute seems to give, it has other compensations. It puts responsibility and power in the hands of human beings. We can *make* some of our ideals come true. We can adopt values that will work.

On the other hand, empirical morality has been weighted down with a one-sided emphasis. Some men have attempted on metaphysical or religious grounds, to establish an assertive egoistic good that would run rough-shod over the rights of others; some have yielded to a bland altruism that would give everything to others; while not a few have thought that the *status quo* should be followed in all cases. A blending of these abnormal tendencies is needed. Egoism, properly defined, means a reasonable self-assertiveness that tends to develop a strong personality (the good); altruism, adhered to correctly, regards the respectful and intelligent consideration of the good of others as necessary for the development of self and of society (the right); and a proper

respect for the existing order would see in it not a system of rules that must be followed submissively but one that has been wholesome and useful in the past, that should be seriously considered in the present circumstances, parts of it being accepted or rejected according as they meet or fail to meet the existing situation(moral rules). A spirit of adventure and growth is impossible either in an empirical system of fixed right or in the quest of a fixed and final union of moral values. The true right and the true good attain enriched meaning and full development only among reasonable and sympathetic people who regard every moral problem as unique, who deem the experimental method of inquiry valuable in itself, who seek to establish a social and moral order in which each shall reach his maximum development by taking account of himself and others, and who conceive the right and the good as the constructive poles of a reflective judgment which is only one phase of a vast on-going life-process that is constantly undergoing reconstruction in its entirety.

W. B. MAHAN.

FAYETTEVILLE, ARK.

A-PRIORISM AND EMPIRICISM

PHILOSOPHY first busied itself with cosmological speculations; but with the great social impulse after the Persian Wars, its attention was directed towards an investigation of the working of the human mind rather than the problems of world creation. It was in this second or anthropological period as it was called that a-priorism and empiricism had their genesis. A-priorism is the doctrine that the mind contains the imminent principles of all knowledge and is unaided by the senses in its search for truth. Closely allied to this general motion, in that they hold that the mind has independent knowledge, are the doctrines of innate ideas, rationalism, dogmatism, idealism and intuitionism. Empiricism holds just the reverse; namely that the senses furnish the ground for all knowledge. Allied to this doctrine, in that the data given by the senses is a factor are those of a-posteriorism, materialism, pragmatism and sensationalism.

The empiric system proceeded from the conviction that there was material and clearness in thought, sufficient for the erection of structures which should take the place of the mediaeval conception of the world. This confidence was not unfounded for the inquiries of the Renaissance, new discoveries and principles had certainly thrown light in the direction in which men's thoughts concerning some of the most important problems were to move in the future. The

Seventeenth Century is especially important, as having formulated energetically and logically the most important hypothesis, touching the relation between mind and matter. With dogmatic haste the empiricists hurried on examining thought and thus seeking for the riddle of existence.

VIEWS OF PARMENIDES, HERACLITUS

It was Parmenides who first pointed out the fact that "preception is deception." This grew out of his notion of Being; which he thought it was an unchangeable One. His theory was at war with itself, for it failed to explain how a single Being, without change could make all the cosmical world. He neglected the real world and thought in concepts only; explaining the plurality of things by saying that they were matters of perception only and that "perception was deception and conception alone gives truth." Were this view carried out, it would lead far from the truth, for all perception is not deception. It gives the data and these acts must be worked over by reason. To the senses, the world is flat and standing still; yet certain phases of perception indicate it to be round, as in the case of ships at sea, eclipses, seasons, etc. The truth of the matter is that the earth is moving at the rate of nineteen miles per second and that the sun in reality is standing still. Thought superimposed on perception alone gives the final truth. A-priorism holds that thought alone would be sufficient to give ultimate truths of reality.

Heraclitus opposed Parmenides, implying scepticism in his negation of Being. The senses for him were not the only means of knowledge; in addition to them there was reason. The senses show what passes away, and consequently knowledge which is based on sensation alone is

deception. His belief was that "all things flow." Reason reveals to us what is stable; the Divine law, the only fixed point in the eternal flow of things. Inasmuch as truth is the same at all times, there could be no certain and final knowledge if everything perceived by the sense was in a constant state of change. Here philosophy emerged from a distrusting state and began to look into its methods and ask if the ontological problems could really be solved at all. It foreshadowed the critical epistemological question: is knowledge possible? and we have naive materialism.

THE SOPHISTICAL SCHOOL

The philosophic pendulum until the time of the Sophists, vibrated between Being and Becoming. Attempts were made at reconciliation, but no common grounds could be established, wherein could be explained the problem of knowledge—the true reality of all things. The Sophists, at this point brought all knowledge to utter collapse by their doctrines of sensationalism. This had its genesis perhaps, in Pythagorean relativism which held that knowledge was relative to the individual. The Sophists believed that perception gave us knowledge and that the senses gave different impressions and so deceive us. Things did not exist, unless they were given in the senses and since sensation differs, there were as many truths as individuals. This led to absolute scepticism; for what any man thought was then true to him. Truth was relative—all that was true was perceived and was so only for the perceiving self. This led them to believe that nothing could be proven by perception, for every opinion would be true and false which grew out of a sensation. A universal validity was wanting. Because sensations were the only sources of knowledge, and were relative, they concluded that knowledge was impossible.

The Sophists are not mentioned because of their contribution to positive explanation for they contributed little or nothing—they were even bad in their immediate results for they destroyed knowledge. Their error was in the denial of the community of knowledge. They ignored the fact that we could correct the sense data and that there was a common knowledge, for if two times two is something else than four, then all knowledge is not possible. However, they were good in the end in that they started the investigation of the problem of knowledge and established a foundation for logic. It is true that chaos and confusion resulted in Greece; but when everything had fallen, there arose a defender of truth and morality—a prophet, Socrates, who turned men to an examination of the mechanics of thought. With him Philosophy became systematic and ceased its random speculation and aimed at the interpretation of truth and reality.

SOCRATES AND THE CONCEPT

Socrates was neither a pure a-priorist nor a pure empiricist, for he was too broad-minded to embrace any doctrines which neglected the facts of reality. He returned to the spirit of early Greek philosophy, for he asked: "What is abiding?" "What is without change?" Perception only suggested a greater depth. Socrates found the unchangeable in the concept. Things change, but the concept which is the essence of the object, must be comprehended in thought. Although he did not ignore the sense data; yet he seemed to have great faith in the human mind, as an instrument for knowledge, for without this he said, knowledge would be impossible. He thought this would lead to uncontradictable truth, the grounds of which was the concept. It was valuable, for it set method against fancy. It

is not wholly satisfactory, for there are often false concepts, and when they are false, all falsity results.

Socrates had that profound faith in human reason, that he believed in the concept, as having a norm of truth. The empiricist, believed only in the things which can be apprehended by the senses. For them, physics and the physical sciences comprehended the sum total of all knowledge. It is easy to recognize this as fallacious, for knowledge is not confined to the senses alone. Mathematics is not given so and yet it is the most absolute science. No one ever saw a line, a point, or a triangle, nor attempted successfully to prove two times two other than four. This indicates that the mind has within itself, construction, order and capacity of directing thoughts to realities. Every science depends on proper concepts. The senses have given us the same thing since creation; but it has taken the mind to bring this sense data into concepts. Kepler, who discovered that the earth moved about the sun in an elliptical instead of a circular orbit, replied to criticism, "The Lord has waited four thousand years for some one to read His manifestations in the Heavens and I don't expect therefore, that all the people will believe in me at once."

DESCARTES "COGITO ERGO SUM"

Philosophy from the death of Aristotle to the Renaissance, busied itself with epistemological as well as political and religious speculation. Rome rose and fell. Christianity held the attention of the thinkers. Modern Europe began; the Crusades came and at last Constantinople fell. Then the Renaissance, or the revival of knowledge, brought back the old problems of philosophy and the minds of men were turned to its speculation. A-priorism and empiricism in this period occupied no small part. Descartes

first suggested the name of "Innate Ideas" to the products of the mind. He believed that all men had ideas of God; but those ideas, because they were infinite, were incapable of conception by finite minds. Therefore, he argued, God must have implanted them himself. They were innate because, since we were incapable of having originated them, they were by nature ideas of Infinity imposed on our mind. His conception was irrational, because all men do not have ideas of God. Whole nations do not believe in the same idea of God and some have no term even to express him. The idea of God, varies from aethism to theism. Savages come to a crude idea of God, yet they get this from the sum total of their experience. The mystery of existence beats in upon their minds; they feel it and cannot express it—it is the unknown of nature calling to the unknown in man. The little child also does not have the faintest idea of God. When Descartes found himself discounted with the philosophy which he had inherited from the past, he found it necessary to reject much that had passed as truth; if only with a view of building up again upon a firmer foundation. He rejected the testimony of the senses touching the existence of a world of external things—in fact, he rejected even the existence of an external world itself. He could doubt all except that he existed. "Cogito ergo sum" was accepted accordingly as the first principle of the new philosophy which he sought. Later he accepted many things which he at the outset rejected as uncertainties. He accepted an external world of material things; yet he could not do it as the empiricist, by reference to an experienced fact. He did not believe that the external world was given directly in our experience, but that we were directly conscious only of our ideas of it and must prove that it existed over against our ideas. By this principle he was forced to prove by a round-about argument, that there was an objec-

tive world. He attempted to establish the fact that God existed, and then argued that God would not deceive us into thinking that a world existed when it did not. In other words, nothing less than God can be the cause, and hence we must infer that God exists, and that an external world exists also. His was a type of philosophy which depended upon truths revealed by the reason independent of experience to carry us beyond the sphere of experience.

VALIDITY OF THOUGHT FOR THINGS

The ideas requiring the co-operation of the senses and consequently of the brain are entirely different from the objects they are supposed to represent. They resemble each other no more than a needle represents the pain it produces. We say that vinegar is sour; yet sourness is a sense and belongs to us and not to the thing. Likewise, we say that light is produced by ether vibrations falling on the retina; but upon closer analysis we find that it is the movement of the rods and cones of the retina which gives us a sense of light. Our mind translates the ether vibrations and we construct from and translate them. This is of equal truth for all senses. Without the brain, sense ideas would be lost. Thought, substance, extension and infinity would be all that would be left after the brain was gone—that is, ideas which are wholly independent of sensation.

Thought is immaterial and inextended; yet the idea is material in its nature. One asks then, how is it that our thoughts can be valid for things? Suppose there is an object before us. The fact that one can perceive it is certain. It can be accounted for only by ether vibrations. The mind does not go to the object nor does the object come to the mind. The object has the power to cause the intermediate ether to vibrate and these vibrations in turn, act upon

the retina and from there they are transmitted to the brain centers. It is the nervous action which is translated and we can go no further. The idea, however, can only fit the object, when the object has had a share in the making thereof. If the idea is genuinely a-priori, it is cut off from the organic connection with the object. A tailor on Mars could not make a suit to fit an inhabitant of Earth nor can an idea born in the cloudland of the a-priori fit an object in the world of facts. Strictly speaking, our a-priori judgments, taking them from whatever fields we may are worthless because if the a-priorist is right they have been formed without any reference to the very objects to which they are later to apply. About all we can say is that we have to assume that our thoughts of things are valid for things. If we do not we cannot assume it and without there would be no knowledge. We trust in nature since it is necessary, or more properly speaking, natural, to give a validity to our thoughts. The cardinal principles upon which the a-priorist grounds his ontology is that nothing can be ultimately real unless immediate experience can be reconciled to it. The a-priorist does not confirm or abolish the a-posteriori, but attempts a transcendation and clarification.

THE ENGLISH SCHOOL

The English school of philosophy, of which the names of Locke, Hume and Mill stand out with great prominence, held strongly to the doctrine of empiricism, believing that all our knowledge; all our notions; all our beliefs were derived solely from experience. There was a streaming into our minds through the senses, of multifold impressions from the external world which were combined in the mind by laws of association and were discriminated, classified, analyzed, recollected and grouped until they formed the

entire miscellany of our facts, cognitions and habits, and even our highest principles, propositions, axioms and generalizations. All that was in man—all that he can call truth was but an induction from circumstances in which he was placed. All truth, therefore, was cogently or historically arrived at. There was no such thing as innate ideas, or a-priori truths in their philosophy for their formula was: "*nihil est in intellectu quod non prius in sensu.*"

Another of their phases, particularly of Locke, was that the mind was to be conceived as originally a "tabula rassa" or blank tablet containing no characters whatever; but receiving whatever was inscribed on it wholly from without. Locke held that if truth was in the mind naturally, why search for what is already there! If knowledge were in the mind we could spin it out as a spider spins a web. He held that there was nothing in the mind but capacity and it would be useless to make investigations if there were ideas therein, when the mind adds nothing but only receives. He did not appreciate mathematics, otherwise he would have seen that it fulfilled his possibility, for it exists nowhere except in the mind. To empiricism in all its forms, mathematics has been a great stumbling block. It is supposed that we have a passive experience of number and space relations and deducting therefrom we get the simple forms of mathematics; but nowhere in external experience, does it exist in the pure form demanded for science. Roots, logarithms, powers, integrals, differentials, etc., are generated by the mind itself, and have no counterpart in experience. The mind evolves all such from itself and objective experiences cannot test their validity. Consequently, empiricism cannot explain mathematics, even as a form of error, without interpreting to the mind a very active propensity to feign. Neither can it allow the truth thereof.

On his own principles, Locke had no right to believe in an external world. He has brought it in; but where from? He believes in it because he thinks it directly revealed in the senses—inconsistently referring to experience, as evidence of its existence. Many empiricists hold that there are universal truths; but that we gather them from experience, while others hold that we know nothing of universals but only of empirically discovered rules, valid only within the bounds of experience. But here we ask, what is experience? What may we accept as directly revealed facts? The answer to such a question is far from an easy one to give. Strict proof is impossible without some principle which the mind takes on its own warrant, for in that case, proof would never come to an end and nothing would have been proven. It must in some way be derived from experience and one has to show how the particular experience itself is possible and how it can be proven a universal truth. Even supposing the experience possible, it could not carry itself beyond itself without the aid of some general truth and if that truth itself is not self-evident it would also need proof. The ultimate conclusion is that the mind must be credited with a power of knowing something on its own account, or hold that there are no grounds for believing any truth as strictly universal at all. Consistent empiricism cannot admit of universals. The senses alone can give us naught but discontinuous sensations and those unaided by sense perception, at best can give us nothing more than discontinuous presentations. We must ask: what weaves this unsubstantial and changeable material into an abiding world? It must be the mind and the mind can do so only because the pattern is implicit therein. Sensations give us no knowledge of permanent reality, not even the physical world, since they are merely passive apprehensions of particular images which are purely subjective and transcient

and exist only for the subject and at the moment of perception. The true objects of knowledge are universal conceptions which are apprehended by reason. Geometrical figures, relations used in the sciences, cause and effect are examples of such. We may see a book, but we do not apprehend what a book is except through the general conception not present in the senses.

Duty, obligation and justice are likewise universal conceptions which can neither be seen, touched or tasted, and are apprehended only by reason; yet they are as real and eternal as the truths and ideas of science. The principles of morality, are as intuitively evident to reason as those of mathematics, and it is absurd to deny one as the other. The immorality of barbarious nations no more proves that morality is a matter of variable beliefs than their ignorance of mathematics proves that mathematical truths are fixed by compacts. Hume insisted that there could be a science of morals, regarding reason as the faculty of grasping and measuring general principles and deducing correct conclusions therefrom. Is reason the original source of our knowledge of truth and falsity of principles? or is it only an instrument for retaining them in the mind and deducing their consequences? In other words, can we ever recognize the truth or falsity of a general proposition as soon as we know what it means? This question expresses the empiric school of Bacon, Locke and Hume more particularly of Bacon for it was he who said: "Take the question to nature and she will not answer you falsely."

The empiricist teaches that our knowledge of general principles is not direct, but derived by induction from particular sensible and emotional experiences. The function of reason is only to co-ordinate and retain, not to discover. It can test the correctness of inferences from premises, but it cannot guarantee the truth thereof. The intuitionists

held the opposite view, namely that there were general propositions; mathematics and moral obligations where truth is intuitively known as soon as their meaning is apprehended and that the evidences of particular experience is both superfluous and that the same is insufficient. Regarding this, Mill holds that pure thought cannot extend our knowledge. It can never do more than show us if we are consistent in our thinking. New thought according to him can be acquired only by observation and experience.

THE POSITION OF IMMANUEL KANT

The German school of philosophy, of which the name of Immanuel Kant, stands out with striking clearness maintained that the mind was active and contained some knowledge on its own account. Kant's position was somewhat like that of Socrates, for just previous to him, Hume had brought all knowledge to collapse and it was Kant's task to resurrect it. He tried to lay a secure foundation for the theory of knowledge. Critical philosophy for him, was that which inquires into the condition of knowledge before assuming to know. He believed that the substances of our ideas were furnished by the senses which was sentimentalism; but that the formation of ideas, was the work of reason wherein he was an idealist. The criterion however is neither sentimentalism or idealism in the extreme sense, but goes beyond both. He asks, first of all: What is knowledge? Ideas taken by themselves separately, as man, horse, heat, etc., certainly do not constitute knowledge. But to become knowledge, these ideas must be combined with other ideas or made into what is called a judgment. Of these, he had two forms: the analytic, when the relation of the predicate to the subject, had its ground in the concept itself. This merely analyzed an idea without any new

thought. Synthetical, when the addition of the predicate to the subject has its ground in something else, which is logically different from both, or which adds some new knowledge. The ground in the case of synthetical judgments a-posteriori is the act of perception itself. A-priori was with Kant, not a psychological but a purely epistemological mark. It meant not a chronological priority to experience but a universality and necessity of validity in principles of reason which really transcends all experience. This must be held constantly in mind if Kant is to be understood. To become scientific, a judgment must be universal—true in all cases.

Kant's problem was to look at knowledge from all points and find the value of the mind rather than discover new ideas. He found that we have universal judgments which extend beyond all experience. He takes this for a fact and asks: What use has this for knowledge? Universal judgments cannot come from experience. Take the proposition: Plato was great, Aristotle was great, Washington was great and Roosevelt was great, therefore all men are great. Experience would limit our judgment; for although we exhaust all the names of the great men we cannot exhaust all, for many are living and the future is yet to come. This would not give us the universal, that man is great, without taking the inductive leap. Kant found that universals could not exist as experiences and since they cannot come from experiences, they must come from the mind itself.

KANT'S TRANSCENDENTAL AESTHETIC

For him, knowledge was the common product of sensibility and reason, as shown in his *Transcendental Aesthetic*. Sensibility furnishes the understanding with material for its knowledge. This material is not turned over directly to

the understanding, but reason impresses or stamps its form thereon. This synthesis is reason's activity and takes place by means of concepts or categories.

By various illustrations, Kant proved that time and space are inner forms of reason and not experiences imposed by reason; but identical therewith. Their best proof is found in mathematics. Arithmetic and geometry, possess the character of absolute necessity. Geometry is possible not because of experience, for no one ever experienced a point or a straight line or any other form of pure mathematics. They cannot be obtained from the sensational world of experience; but are only in the nature of reason itself. Ideas of time and space are not the result of intellectual operations or comparisons of different spaces or combinations of moments of duration, but principles of perception. We cannot see space, but we see all things in space. We thought of it as external and concrete in our primary days. We think of space as spatial and consequently we use it as time. The notion of time is succession. It is necessary to have space and time as principles of our intelligence—categories of the mind, otherwise we could not experience them as objective things. If space were a matter of experience we could never know it.

Locke obtained all the knowledge we possess from the senses. He thought perfected ideas came into the mind. This was wrong and Hume exploded it, holding that we received such ideas as cause, etc., not from the senses but from habit. This was a decided advance over the Sophist's idea of sense perception. We must remember that there was no serious wrestling with the problem of knowledge until the time of Kant. He claimed to have discovered that the mind is constituted to know time and space. They are forms of pure perception from which we cannot escape and are imposed by the mind upon all things. The universality

of mathematics is due to its universal and necessary validity.

KANT AND THE CATEGORIES

Just as intuitive faculties perceive all time and space, so likewise, reason molds its judgments according to certain a-priori forms, called general notions or categories. Kant found that the greatest category, the idea of cause, is not found from experience or habit, but is innate as a form of the mind. He made an inventory of Aristotle's categories and tried to find the forms under which we think. Instead of doing as Locke did, in trying to get the genesis of things, he gave his attention to the products of the mind and asked what does the mind do? He found that it was constantly synthesizing. If nature were a real system—a thing apart from the function of reason we could know it only through experience; but natural science needs a number of general principles as the condition of things. Nature is not only spatial and temporal, but it is a connected system which we perceive through the senses. A universal science of nature is possible only if our conceptual forms determine nature itself. If nature prescribes laws to the understanding we would have only empiric and inadequate knowledge. An a-priori is possible only when that is reversed and our understanding prescribes laws to nature. But our understanding cannot determine nature in so far as it exists in itself, but only so far as it appears in our thought. Kant seemed to have a feeling of a thing in itself, apart from thought and consciousness only and not a-priori. But a universal knowledge is possible only if our thoughts can be imposed on nature and become true in all cases. Laws of reason manipulate phenomena and bind themselves into a connected system of the mind. The fundamental differ-

ence between Kant and the Greek theory was that the Greeks assumed objects of thought, while Kant discovered the objects to be products of thought by their constant syntheses. Locke thought ideas came ready made into the mind. Kant believed they were not independent of thought, but products of thought. Ideas nor objects are nowhere individually given, but the synthesis is constantly going on. The categories are regulating forms of syntheses, by which one gets the objects. There are as many as there are judgments. All syntheses of time and space are characteristic because they become objects only by being combined by rules of the understanding. Universal validity stands for all minds, fixed and coherent—possible only because the ego which gives us universals has the power of transcending the individual.

The one postulate of physical science is that the real objects revealed to us in experience are described in universals or categorical terms and are so, whether these objects are things or events. In order to be tangible the thing or event must appear in time and space, because these, as forms of experience, are actually the aspects of our conscious life, and we have to use them as the basis of every description. In order to make our descriptions valid for all intelligences, they have to be universal and reduce the transient to the permanent. Hence, we have to describe in terms of changeless realities, otherwise objects would not become universal.

EXISTENCE OF OBJECTS INDEPENDENT OF THE MIND

When the empiricist talks about arriving at truth independent of the a-priori, he is making a self-contradictory assertion. There can be no arriving at knowledge without starting. There must be a beginning somewhere—an

initial point of departure which is itself derived. The pragmatist likewise is doing a traffic with the word "fact." They hold that all knowledge must have its foundations deep down in the world of concrete fact. To this one replies—that in order to realize itself, thought must to be sure, pass through fact. This, the a-priorist has never denied. Kant held that the a-priori forms of thought are empty and without meaning until they have received the realization of reason. He tells us of the difficult problem of conceiving how the ideas of the infinite and the a-priori can arise in a finite, imperfect being, all of whose knowledge must begin in experience, and therefore can never be separated from experience. He fails to observe however, that in describing empiric or a-posteriori knowledge as imperfect, he is employing the very conception of the totalizing whole which he condemns in the a-priorist. He cannot know that the finite or imperfect is such, except in so far as he has logically a-priori knowledge of the infinite or perfect. Every judgment of the imperfect requires that the judging mind be possessed of a standard of perfection against which the so-called imperfect knowledge is measured and found wanting. If the mind were confined to the a-posteriori it should never know it.

One knows an a-posteriori fact by one act, and one knows one which is a-posteriori by another, so on to infinity of posteriori, unless the starting one is a-priori. If data were really given, if it were cast at the mind of ultimate reality—the world of things in themselves—then that world must need contain the principles of efficient causality. This, however, Kant's own principle denies. Thus we see the world of objects, independent of the mind could never be known. In the first place mind could not reach out to the objects. This is obvious. If thought and reality were identical all would be true. Every thought would be valid in

the world of experience. If thought and reality were twain, then there is no path by which thought could find access to reality. Locke claimed that mental experiences are not from experience, but it was an experience in which those principles were implicit. Hume saw this and sought to reduce experience to its true dimensions and these he found in impressions. Kant showed that an experience can never become anything articulate, without an organizing activity on the part of the mind, according to principles immanent in the understanding. He maintained that homogeneous activity was the fundamental characteristic of intellectual life and asserted that this life cannot be explained by external influences only. He maintained that our knowledge cannot lead us further back than the fundamental forms and the fundamental law of intellectual life as it appears in experience.

Kant designed to begin with a sceptical attitude towards metaphysics and continue in the critical methods and to end with the final refutation of dogmatic unbelief and the establishment of rational faith. His metaphysics restricted itself to the realm of pure knowledge a-priori and rejects every consideration of experience. It undertakes to give philosophy the dignity of science, derived from concepts. By clinging to this notion, Kant was prevented from following the path which Schopenhauer adopted—that is from making phenomena the starting point of philosophy.

SPENCER'S FORMATION OF IDEAS

Regarding the formation of ideas. Spencer makes front on the one hand against Leibniz and Kant and on the other against Locke and Mill. He disputed empiricism for several reasons. For him it did not show that the matter of experience is always taken up and elaborated in a definite manner

which is determined by the original nature of the individual. He also seems to think that it lacked a criterion of truth. We must assume an original organism, if we are to understand the influence exerted by a stimuli on different individuals and the criterion by means of which a proposition can be established is the fact that its opposite would contain a contradiction. In the inborn nature of the individual, and in the logical principle on which we depend, every time we make an inference, we have a-priori elements which cannot be deduced from experience.

A SATISFACTORY THEORY

A satisfactory theory of knowledge accepts the critical method of Kant, but pursues it with more thoroughness and fidelity than its author employed. It therefore does not come to Kant's sceptical and somewhat inconsistent outcome. It finds with Hegel, as against Kant that the purely negative and limiting conception of the ding-an-sich, represents nothing important or actual in the processes and objects of knowledge or thought. It also finds that the positive content of the conception, missed by a sceptical analysis, is to be found present in every act of knowledge.

JOHN J. BIRCH.

SCHENECTADY, N. Y.

LIFE AS A FORM OF CHEMICAL BEHAVIOR

WHILE many theories as to the origin of life have been put forth, the majority of scientists are disposed to believe that living matter has evolved from non-living matter here on earth.

This view recommends itself because it has the advantages of a monistic system. Dualisms are always disconcerting. The only dividing line between science and superstition is the law of parsimony, which, in this case, means that life can be accounted for without invoking a vital force or non-biological entity.

When living matter is analyzed it is found to consist of water, proteins, fats, carbohydrates and salts. In combination these elements have the property of life. Now, why is it that these elements have properties in combination which they seemingly do not have in isolation? Is there, as Verworn believed, a living substance, biogen, for which the other materials of protoplasm constitute the environment? Those who hold to this view that protoplasm is a specific chemical substance adhere to what is known as the *stuff* theory of life. The *engine* theory of life, holding the belief that the difficulties encountered by the assumption of a specific biogen molecule are insuperable, states that life may be regarded as consisting of the mutual interactions of a mixture of substances, colloids and crystalloids, organized in a definite way. There is no specific living substance.

While the applications of chemistry to the phenomena of living matter have thrown light upon the problems of

biology—and, indeed, it has been said that physics and geometry are unified in biochemistry—there still remain some scientific workers who despair of ever explaining life by physics and chemistry alone. Upon what grounds does such a “pessimistic” outlook rest?

One of the difficulties encountered in subsuming the life processes under the categories of mechanics is this: when a mixture of substances is undergoing definite reactions in a test tube these reactions progress towards a final state of equilibrium or “completion” in which the substances possess different proportions from that with which they started. But in protoplasm, “the physical basis of life,” the proportions of the mixture remain relatively constant. It is because the physiological activities of the organism maintain *normals*, such as the regulation of the hydrogen ion concentration, that J. S. Haldane¹ argues that life itself is a unique reality.

The organism is a relatively stable unity of diverse chemical substances interacting upon each other and the environment. Life is not only, as Spencer says, “the continuous adjustment of internal relations to external relations”; it is also the mutual adjustment of the manifold transformations within the organism to each other. The problem of regulation is that of conceiving the mechanism whereby these chemical processes are equated to each other. The normally functioning organism is an algebraic sum of two factors, the plus (+) and the minus (−), and the whole organism is so complexly interconnected that it is a wonder that it can function as a unit at all. How, for example, is the chemical constitution of the blood stream kept relatively constant, in the face of all the variables which influence its composition? Then there is the analogous problem of explaining the normal “mechanism of

¹“The New Physiology,” by J. S. Haldane, *Science*, N. S., vol. xlv, pp. 621-631.

defense" whereby the body resists disease. Pathologists are still mystified by various aspects of immunity.

To designate this order of phenomena, various terms have been employed, such as *organicity* and *organization*. These terms refer to the fact that the whole of the organism seems to act in the unit parts, in development following upon the combination of the genetic units in fertilization, as well as in the balancing of the processes within the organism to each other, and the adjustment of the organism to its external environment.

By what sort of physical-chemical model can we picture the structure necessary to maintain and reproduce vital behavior? Driesch, J. S. Haldane, J. A. Thompson, Bergson, William McDougall, and probably L. J. Henderson, and others, hold that there is no mechanical scheme which enables us to understand how the phenomena of growth and regulatory processes take place. Driesch has shown that no "constellation of parts" will explain the facts of development and restitution of parts. He therefore invokes *entelechy* to perform the functions. Reinke's *dominants* are also created for the purpose of explaining the "influence of the whole on the parts." While it must be admitted that there is no mechanical model adequate to all the facts of living matter, in the light of what has already been achieved, the biologist may legitimately believe that this model will be forthcoming in the future. As Sherrington² states in his Presidential Address, "Of not a few of the processes of the living body, such as muscular contraction, the circulation of the blood, the respiratory intake and output of the lungs, the nervous impulse and its journeyings, we may fairly feel, from what we know of them already, that further applications of physics and chemistry will furnish a competent key." Certainly there is a strange

² "Some Aspects of Animal Mechanism," by Sir C. S. Sherrington, *Nature* (Sept. 9th, 1922), vol. 110, No. 2758, p. 351.

psychological phenomenon involved in the belief that by creating a metaphysical entity and labelling it with a word you are thereby explaining something. The term life, for a monist, simply means that matter behaves differently under some conditions than it does under others.

Let us, then, try to determine what hope there is of giving a monistic account of those processes of life which have seduced the vitalists to the worship of false divinities in the guise of non-biological entities.

First of all, it is to be noted that the gaps in the knowledge of nature are not so unbridgeable as was once supposed. This is now evident from the numerous analogies and identities between fields formerly supposed to have little in common. To cite a very obvious illustration, protoplasm in animals behaves the same as that found in plants.

Living matter is said to have certain properties or functions which differentiate it from non-living matter. These are growth, cell reproduction, respiration, irritability, metabolism and cell motion. But as Schäfer³ points out, many of the phenomena of living matter can be duplicated in the behavior of non-living matter. Amoeboid movements, indicative of life, are reproduced in oil drops and even in mercury globules. Fertilization can be induced by chemically artificial means. Again, if respiration be the taking in of oxygen and the giving off of carbon dioxide, then a glass of soda water breathes. Similarly, rust accumulating on iron is growing as a cell grows by increasing its size through chemical action.

In a word, from the monistic point of view, man is a great big test tube. The differences between man and the reactions of inorganic chemistry are several: (1) organic reactions usually do not go to completion; (2) organic

³ "The Nature, Origin and Maintenance of Life," by E. A. Schäfer, *Science*, N. S. vol. xxxvi., No. 923.

reactions are usually slower. Therefore, we get equilibrium conditions more often in organic reactions than in inorganic processes. Here we have the clue to the existence, if not the explanation, of the mysterious processes of living organisms. The difficulty of understanding life lies in the problem of explaining or describing how, in the multiple complex processes of life, the integrity of the organism as a whole is preserved. What are the integrating factors?

The many chemical processes in a complex organism are not represented by straight line equations. Protoplasm is not chemically a single, homogeneous substance. The orderly operations of cells result from the dynamic equilibria in a polyphasic colloidal system.⁴ Chemically, life is not given as a linear equation, for the bi-molecular and tri-molecular reactions give equations of the second and third orders, and so on. But there are invariants persisting through different transformations, and "purpose" seems to be implied in the tendencies to reaction which persist in an organism until the final end result is attained. The organism reacts as a unit and not as a statistical average of uncoordinated parts. The problem of the unity or individuality of the organism is that of describing how these heterogeneous physiological processes are integrated.

Without here trying to solve this problem it is to be noted that it is the great merit of the theory of evolution to have forced us to regard the more complex organisms as having developed out of simpler forms of life. In the light of this fact, and our general point of view, it may be stated as an empirical law that there are physiological gradients and differences of potential in the lower organisms⁵ which determine the directions and dimensions of the subsequent specialization of tissue and differentiation of

⁴ "The Physical Basis of Life," by Edmund B. Wilson, *Science*, N. S., vol. lvii, No. 1471, p. 278.

function, and that the integrating mechanisms of higher organisms, mechanical, chemical and neural, are possible because, to put it animistically, they represent nature's effort, through vast periods of time, to realize complex but unified organisms.

The activities of living organisms are the expressions of the conversion of one form of energy into another. An organism may be defined as a dynamic system of energies preserving its integrity through constant metabolism and the interchange of energies with its surrounding environment.⁶ The laws of energy transformation, sometimes called the laws of thermodynamics, apply to organic as well as to inorganic transformations. Thus, the first law states that the energy expended by a physiological machine is equal to the energy taken in as food, plus the waste products. The validity of this law is not questioned on the physiological level, though its bearing on the supposed interaction of mind and body has been debated. The applicability of the second law, which states that energy tends to become degraded into heat, is questioned. Driesch, for example, suggests that entelechy may suspend the operation of this law.

The energy changes resident in living matter are referred to as metabolism of the organism. Metabolic processes have two aspects, *anabolism* and *katabolism*. Anabolism refers to the synthetic or assimilation processes. Katabolism refers to the process of dissimilation by means of which the complex compounds of high energy content are broken down. This process prevails in the animal cell. The *stimulus* is usually said to act as a trigger effect because it releases the stored-up energy which makes the organism an equilibrium under stress. Anabolic changes in living

⁵ "Growth in Living and Non-living Systems," by Ralph S. Lillie, *The Scientific Monthly*, vol. xiv, No. 2, pp. 129-130.

⁶ *An Introduction to Neurology*, by C. Judson Herrick, page 18 (1916).

matter build up complex compounds out of simpler compounds possessing less energy, an illustration of this aspect being the photo-synthesis chlorophyll in plants. Bergson refers to this as the canalization of energy, and argues in *Creative Evolution* that whenever energy, descending the incline indicated by Carnot's law, meets with a cause of inverse direction which retards the descent, there life appears. Professor James Johnstone regards the capacity of converting one form of energy into another, without the loss entailed by passing through heat (or an increase of *entropy*) as the capacity peculiar to living beings. This contention is disputed by W. M. Bayliss.⁷

These organic syntheses in cells are regulated by enzymes which affect the metabolism. Enzymes are catalytic agents which usually increase, but sometimes decrease, the velocity of a reaction, without themselves entering into it. Thus the enzyme ptyalin is active in the conversion of starch into sugar. Just as in physics the discovery of radium opened up vast unexplored regions of intra-atomic energy, so vitamins, hormones and enzymes reveal energy relationships not formerly suspected. But these revelations can not be taken to support vitalism for the chemical synthesis of organic compounds, like that of urea by Wöhler and the sugars by Emil Fischer, is now attained in the laboratory.

From this brief survey we may say that while the behavior of living matter is not deducible from the laws of thermodynamics, it is no more inconsistent with these laws than molecular behavior is inconsistent with atomic or electronic behavior. The emergence of new properties is entirely consistent with monism. The real justification for the rejection of biological dualism lies in the application of the laws of physics and chemistry to many of the proc-

⁷ *Life and the Laws of Thermodynamics*, by Sir W. M. Bayliss, Oxford University Press, 1922, p. 9.

esses of living matter.

One of the most notable of these unifications, which binds physics to biochemistry, is the application of the gas laws to substances in dilute solution. Ultimately, the whole progress of biochemistry rests upon the kinetic molecular theory, developed largely by Clausius, Maxwell and Boltzmann. The molecular theory has enabled us to understand the behavior of the colloids, which are so important in the life processes.⁸ The enzymes mentioned previously are themselves colloids. This kinetic theory is valuable, then, because the behavior of colloidal particles in suspension is not fundamentally different from the behavior of particles of molecular dimensions. The real beginning was made when Avogadro introduced order into the laws of Boyle and Gay-Lussac by making the assumption that under the same conditions of pressure and temperature the same volume of any given gas contains the same number of molecules. The fertility of this hypothesis is evidenced in the analogy which is now drawn between gas pressure, due to molecular bombardments against the containing vessel, and the osmotic pressure of solutions. A further advance was made in the investigations of Willard Gibbs in thermodynamics, which have provided the theoretical basis for the study of different substances in heterogeneous solutions.

On the basis of these unifying generalizations it can now be said that the behavior of solutions, osmotic pressure, equilibrium constants, etc., have their analogues in inorganic chemical and physical systems. The accelerating and decreasing of the reaction velocities of living processes is regulated by the same general laws of reaction velocities as obtain in inorganic chemistry. We need only mention Van't Hoff's statement of the influence of temperature

⁸ *The Dynamics of Living Matter*, by Jacques Loeb, Lecture III.

upon the speed of reaction and the law of mass action, though in connection with the latter there is a question as to the extent to which the law of mass action can be applied to physiological reactions.

Along with the kinetic molecular theory must be ranked the theory of electrolytic dissociation of Arrhenius. A few illustrations of the relevance of this theory to physiological reactions will suffice. The interior and the exterior of protoplasm probably differ in their electrical charge, the surface of the cell being charged negatively. This may render less mysterious the process of cell division. That colloidal material should have the tendency to divide when it reaches a certain size may be due to the alteration of surface tension as an electrical phenomenon. Equally important are the electrical properties of surfaces in contact or interfaces, and the effect of the electrical charge on the rate of passage of ions through membranes.*

At this point we may digress a moment to state that just as there is no one satisfactory explanation of osmotic pressure, so, also, it is difficult to account for the source of the electrical charge on a colloidal particle by any one theory. But, here again, it would be poor science to take this as a justification for the rejection of monism.

Let us return to the earlier suggestion that there are baffling aspects to the bodily processes of resisting disease. Even here the pathologist is not wholly at sea. In the neutralization of a toxin by an antitoxin we have the suggestive parallel of the neutralization of a moderately strong alkali with a weak base.

This physiological opposition of reaction tendencies between anions and cations may throw light upon the more

* *Interfacial Forces and Phenomena in Physiology*, by Sir W. M. Bayliss, London, 1923.

mysterious process in neurology known as excitation and inhibition. At this point, however, we are going beyond the

scope of this essay, for the question of facilitation, inhibition and volition carries us into the field of psychology, and it is not the purpose here to attempt the reduction of mental processes to their neuro-muscular basis. We may therefore sum up the position developed in the foregoing pages under the following empirical laws:

(1) Structure determines function. An organism is a definite organization of organs or structures. Physiological tissues differ in function because of differences in physical-chemical structure.

(2) The physiological basis of life consists of a condition of matter in which there is a balance of energies in delicate equilibrium.

(3) Each structural variation in matter is accompanied by a definite energy distribution.

(4) Matter, so far as its energy environment will permit, tends to assume more and more complex forms in labile equilibrium.¹⁰

(5) The reaction systems of protoplasmic matter form the starting point for the development of more complex equilibria, and each synthesis into more complex forms is attended by a correspondingly increased range of behavior.

(6) Protoplasmic systems tend to maintain their integrity through a variety of metabolic changes.

(7) The work of Hering¹¹ and Semon¹² has developed the conception of memory as the general and fundamental function of living matter. Etchings on the protoplasm by external stimuli leave reaction tendencies, called engrams, as evidence of experience.

(8) The nervous system, as Professor Child¹³ has shown, does not represent a new integration somehow im-

¹⁰ *The Origin and Nature of Life*, by Benjamin Moore, pp. 188, 224.

¹¹ *On Memory and the Specific Energies of the Nervous System*, by Ewald Hering, Chicago, 1895.

¹² *Die Mneme*, by Richard Semon, Leipzig, 1904.

¹³ *The Origin and Development of the Nervous System*, by Chas. M. Child, The University of Chicago Press, 1922.

posed upon primitive protoplasm, but rather a product of the primary integrating factors which make the organism an orderly whole. Specialization of tissue and differentiation of function follows the path of the physiological gradients permanently recorded in protoplasmic substance. All the processes of life have their analogues in chemical inheritance, mutation and adaptation.¹⁴

(10) Memory is a complex synthesis of engrams. Mental processes, as dependent upon neural tissue, constitute the supreme synthesis of nature.

Life is not a thing or metaphysical entity, but a function of chemical substances under specific conditions. Life is a form of chemical behavior. The impulse to reify a function is due to the tendency to hypostatize whatever can be labelled with a term.

True, the laws of the behavior of organic matter are not strictly deducible from the laws of thermodynamics. The macroscopic equations of organic behavior are not formulated a priori by mathematical induction, but they are discovered by empirical observation. In a sense, history and not mathematics is the final word in science. But the "emergence" of life is not a supernatural event. The "creative advance of nature," or what Lloyd Morgan calls *emergent evolution* is the inevitable consequence of the synthesis of constituent elements into higher unities. Reality, then, is not a single, infinite, deductive system, as certain mathematical philosophers would have us believe. Science is largely inductive in character because of the fact of the appearance of unpredictable qualities. Time, therefore, should not be understood as a mere fourth coördinate of space, for the temporal, dynamic and epigenetic aspect of nature is just as "real" as the spatial order.

OHIO STATE UNIVERSITY.

OLIVER L. REISER.

¹⁴ *Chemical Phenomena in Life*, by Frederick Czapek, New York, 1911, ch. x.